United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Mother Lode Field Office
5152 Hillsdale Circle
El Dorado Hills, CA 95762
www.blm.gov/ca/motherlode

Cosumnes River Preserve
Cougar Floodplain Restoration Project (CA-180-12-12)
Finding of No Significant Impact
January 2104

It is my determination that this decision will not result in significant impacts to the quality of the human environment. Anticipated impacts are within the range of impacts addressed in the Sierra Resource Management Plan/Final Environmental Impact Statement. The proposed action does not constitute a major federal action having a significant effect on the human environment; therefore, an environmental impact statement is not necessary and will not be prepared. This conclusion is based on my consideration of CEQ's following criteria for significance (40 CFR §1508.27), regarding the context and intensity of the impacts described in the EA, and based on my understanding of the project:

1) *Impacts can be both beneficial and adverse and a significant effect may exist regardless of the perceived balance of effects.* The proposed Cougar Floodplain Restoration Project will result in positive benefits by increasing the amount of valley oak riparian forest and riverine floodplain habitat that supports federal and state listed threatened and endangered species. Some negative impacts will occur during the actual restoration but these impacts will be isolated and temporary in nature. All impacts to sensitive species, valley oak riparian forest, floodplain habitat and their associative wildlife species would be beneficial over the long term, as would the recreational opportunities within the hunting program.

2) *The degree of the impact on public health or safety.* No aspects of the proposed action have been identified as having the potential to significantly and adversely impact public health or safety. The proposed action provides benefits to public health and safety in terms of creating additional floodplain and slough channel habitat that can help to alleviate the adverse effects of flooding.

3) *Unique characteristics of the geographic area.* The project area does contain ACEC values. These values would not be negatively impacted. On the contrary, an additional 100+ acres of valley oak riparian forest would be created within the geographic area.

4) *The degree to which the effects on the quality of the human environment are likely to be highly controversial effects.* No anticipated effects have been identified that are scientifically controversial. As a factor for determining within the meaning of 40 C.F.R. § 1508.27(b)(4) whether or not to prepare a detailed environmental impact statement, "controversy" is not equated with "the existence of opposition to a use." *Northwest Environmental Defense Center v. Bonneville Power Administration*, 117 F.3d 1520, 1536 (9th Cir. 1997). "The term 'highly controversial' refers to instances in which 'a substantial dispute exists as to the size, nature, or effect of the major federal action rather than the mere existence of opposition to a use.'" *Hells Canyon Preservation Council v. Jacoby*, 9 F.Supp.2d 1216, 1242 (D. Or. 1998).

5) *The degree to which the possible effects on the human environment are likely to be highly uncertain or involve unique or unknown risks.* The analysis does not show that this action would involve any unique or unknown risks. This is particularly true in the case of the floodplain modeling which demonstrates that there may be slight improvements in the ability of the restored ecosystem to better handle seasonal flooding events.

6) *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.* Restoring floodplain and riparian habitat along the Cosumnes River is not precedent setting. It has been occurring actively and passively by the BLM's implementing partners at the Preserve for more than two decades.

7) *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.* No negative significant cumulative impacts have been identified. The proposed action is consistent with the actions and impacts anticipated in the Sierra Resource Management Plan and its associated environmental impact statement. The actions are also consistent with the Cosumnes River Preserve's March 2008 Final Management Plan.

8) *The degree to which the action may adversely affect National Historic Register listed or eligible to be listed sites or may cause loss or destruction of significant scientific, cultural or historical resources.* The proposed action will not affect cultural resources listed on or eligible for the National Register of Historic Places and would not cause the loss or destruction of significant scientific, cultural or historical resources.

9) *The degree to which the action may adversely affect ESA listed species or critical habitat*. No ESA listed species (or their habitat) will be adversely affected by the proposed action. The action will result in positive benefits to listed species as well as species of concern.

10) *Whether the action threatens a violation of environmental protection law or requirements*. There is no indication that the decision to move forward with the proposed action would result in actions that will threaten such a violation.

_____ _____

William S. Haigh Date
Field Manager, Mother Lode Field Office

United States Department of the Interior

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ENVIRONMENTAL ASSESSMENT
Cougar Floodplain Restoration Project

Cosumnes River Preserve
Galt, Sacramento County, CA

January 2014

Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
ADT	Average Daily Traffic
APE	Area of Potential Effects
ARPA	Archaeological Resources Protection Act
BA	Biological Assessment
BLM	U.S. Bureau of Land Management
BMP	Best Management Practice
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
Corps	U.S. Army Corps of Engineers
CRP	Cosumnes River Preserve
CWA	Clean Water Act
EA	Environmental Assessment
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FR	Federal Register
GHG	Greenhouse Gas Emissions
Hg	Mercury, Inorganic
MBTA	Migratory Bird Treaty Act
MeHg	Methylmercury
NAGPRA	Native American Graves Protection and Repatriation Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PM	Particulate Matter
RMP	Resource Management Plan
SFNA	Sacramento Federal Ozone Nonattainment Area
SMAQMD	Sacramento Metropolitan Air Quality Management District
SRP	Special Recreation Permit
SVAB	Sacramento Valley Air Basin
SWPPP	Stormwater Pollution Prevention Plan
UAIC	United Auburn Indian Community
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.G. Geological Survey
VRM	Visual Resource Management

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EA Number: CA-180-12-12

Proposed Action: Cosumnes River Preserve's Cougar Floodplain Restoration Project

Location: The proposed project is at the Cosumnes River Preserve (Preserve). The Preserve is located west of the City of Galt in southeastern Sacramento County, California (Figure 1). The "core" of the Preserve stretches along the Cosumnes River from its confluence with the Mokelumne River near I-5 and the San Joaquin County line extending up river past Highway 99 and Dillard Road towards the town of Wilton, California. The Preserve also includes Staten Island (in San Joaquin County), McCormack-Williamson Tract, and several private farms and ranches that are protected under conservation easement.

The proposed project site is the BLM's Cougar Wetland Unit, located four miles west of Galt, California on Orr Road. The site is located within the E ½ of section 26 and the NW ¼ of the NW ¼ of section 25 T 5 N, R 5 E, of the MDM on the 7.5 minute Bruceville, CA USGS quadrangle. The latitude and longitude of the approximate center of the proposed project site are 38°15'24.97" North and 121°23'48.94" West (Figure 2).

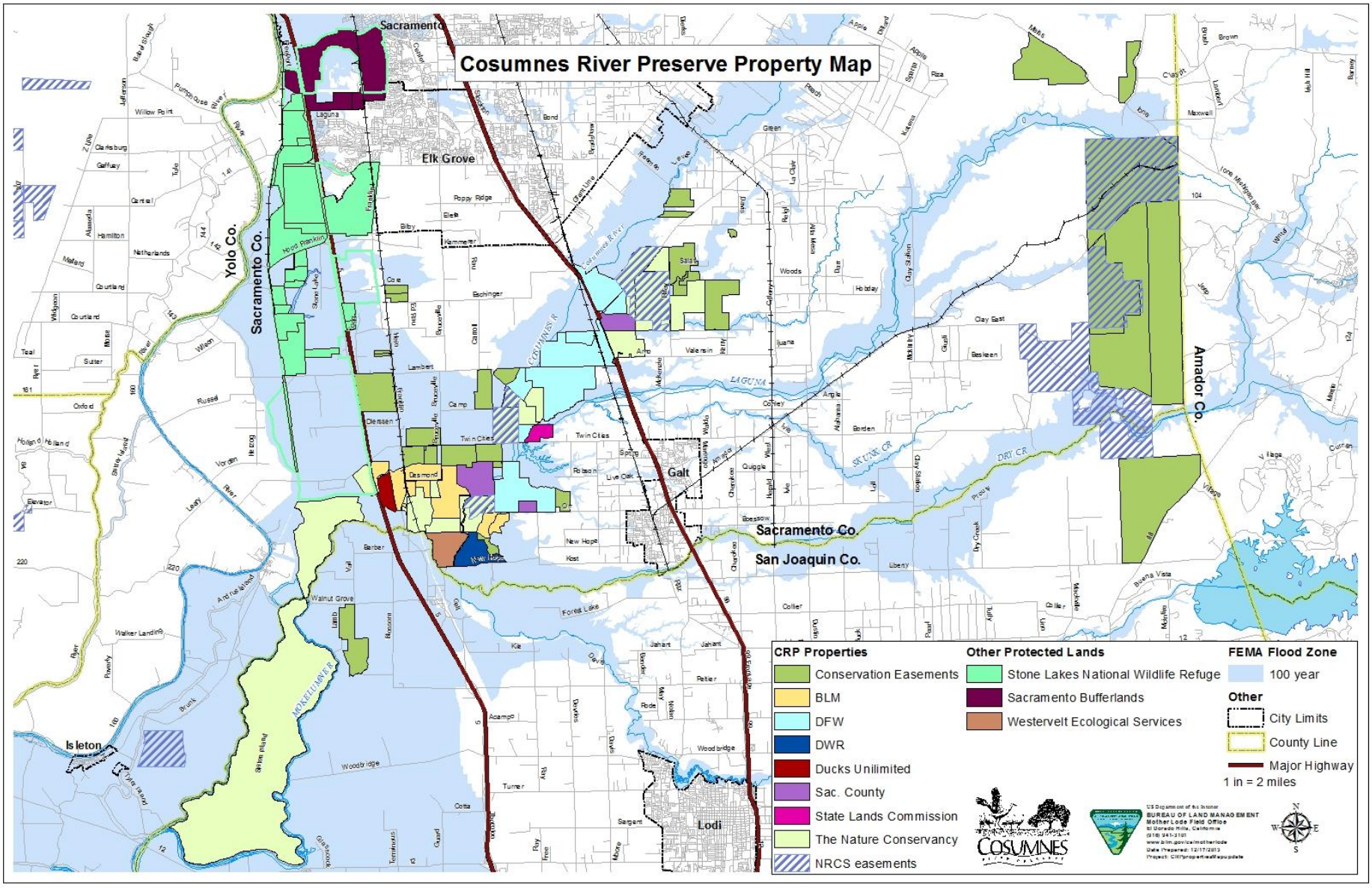

Figure 1: Map of the Cosumnes River Preserve, located near the City of Galt, Sacramento County, California.

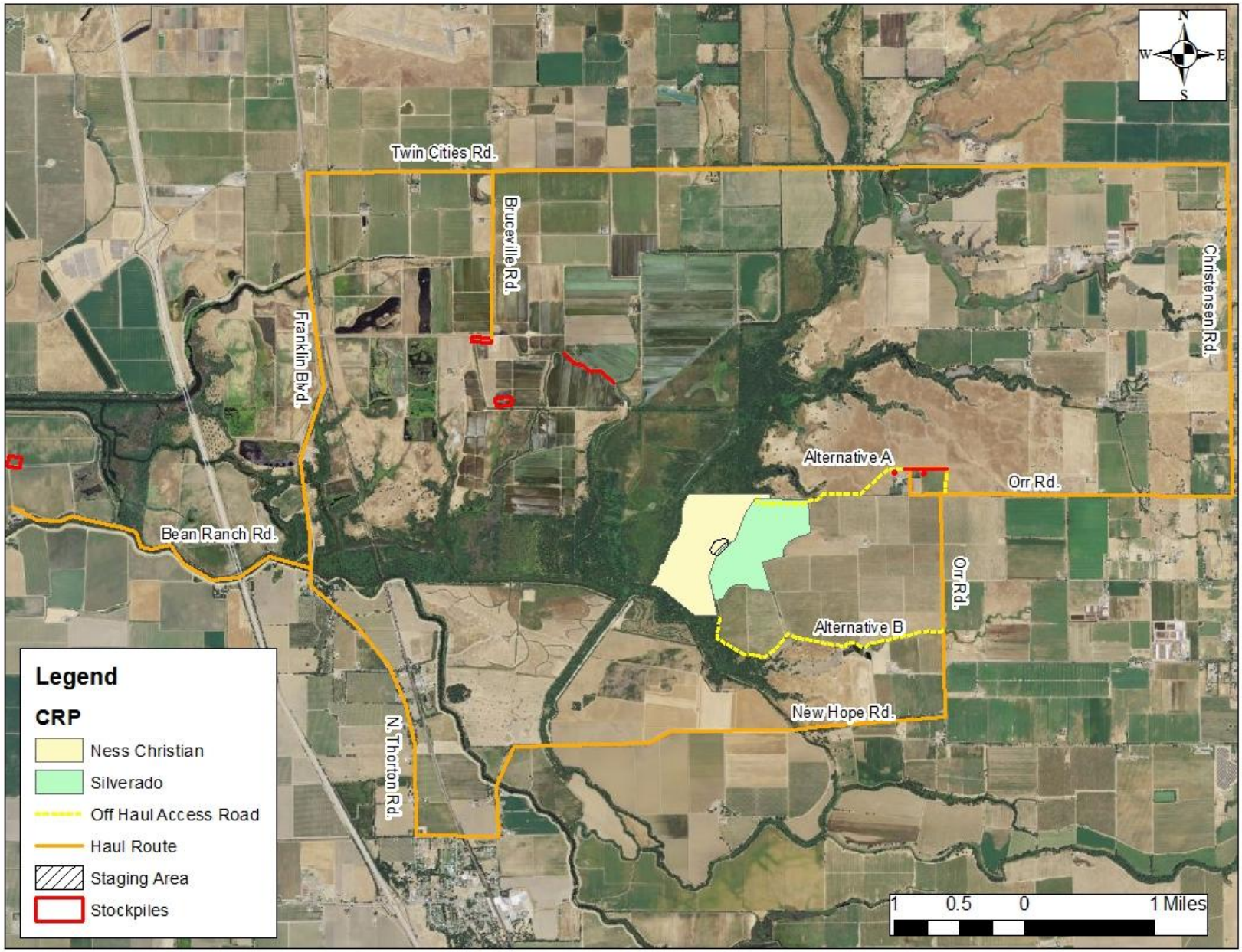

Figure 2. Proposed project site and action area.

1.0 Purpose of and Need for Action

1.1 Need for Action

The U.S. Bureau of Land Management (BLM) is one of seven land-owning partners at the 50,000-acre Cosumnes River Preserve (Preserve). The Preserve is a collaborative partnership between federal, state and local agencies as well as non-profit conservation organizations and private farming and ranching cooperators. The mission of the Preserve is to protect, conserve, restore, and manage upland, wetland, riparian, and riverine habitats along with wildlife-friendly agricultural lands that dominate the lower Cosumnes River watershed.

The proposed action area is approximately 240 acres of Preserve lands located off of Orr Road near the City of Galt, California. The proposed project site is located on the BLM-owned 154-acre Cougar Wetland Unit (Cougar Unit) and the 122-acre Silverado Unit (also known as "Valley Oak") (Figure 2). These lands consist primarily of 90 acres of managed freshwater emergent wetlands and their associated levees and roads, approximately 50 acres of passively managed seasonal wetland habitat, approximately 25 acres of adjacent upland habitat, approximately 12 acres of lacustrine habitat with lagunitas[1], approximately 57 acres of valley oak (*Quercus lobata*) dominated riparian habitat, 4,200 linear feet of the Cosumnes River, and approximately 3.07 linear miles of riverine habitat downstream of the project area. The water levels in the Cosumnes River at the proposed project site are influenced by the tides that occur in the downstream Sacramento-San Joaquin Delta.

The existing managed wetlands on the Cougar Unit provide seasonal freshwater wetland habitat for winter migratory waterfowl and waterbirds, as well as recreational hunting opportunities for youth, women, and mobility-impaired hunters. However, trying to manage seasonal freshwater wetlands that are located immediately adjacent to the flood-prone Cosumnes River creates serious management challenges for the Preserve. Primarily, the Preserve is not able to control the extent, timing, and duration of natural flooding that overtops the existing, low-lying agricultural levee system that once protected the Unit. This, in turn, creates management issues such as the removal of excess sedimentation, the manipulation of excessive wetland vegetation to create optimum waterfowl habitat, the repair and replacement of managed wetland infrastructure, and the treatment of highly invasive, non-native plant species such as yellow water primrose (*Ludwigia hexapetala*) that thrive in wetland and riparian landscapes that cannot be properly managed through water manipulations and mechanical and herbicide treatments. As such, the most functional and cost-effective use of the Cougar Unit is to restore it to its natural function, thereby restoring rare, native habitat for at-risk species such as fall-run Chinook salmon (*Oncorhynchus tshawytscha*)that desperately need this type of floodplain habitat for their continued survival in the Cosumnes River (Jeffers, *et al*. 2008, Limm and Marchetti 2009).

[1] Lagunitas are defined as "perennial floodplain lakes" in *Sacramento-San Joaquin Delta Historical Ecology Investigation: Exploring Patterns and Process* (Whipple *et al*. 2012) and Florshiem and Mount's (2002) paper on "restoration of floodplain topography by sand-splay complex formation in response to intentional levee breaches".

1.2 Conformance with Applicable Land Use Plans

The proposed action is in conformance with several plans and guiding documents. The BLM's February 2008 Sierra Resource Management Plan (RMP) is the overarching Plan for management actions in the entire Mother Lode Field Office's jurisdiction, which includes the Cosumnes River Preserve (BLM 2008). The RMP states that one goal for the Mother Lode Field Office-managed area is to "*Maintain, improve, or enhance native fish and wildlife populations and ecosystems upon which they depend*" (p. 12). The Objectives stated under that goal include:

- Restore disturbed or altered habitat for all life stages of native wildlife species, aquatic species, macroinvertebrates, special status species, and native fish species, including spawning fish passage habitat;

- Maintain or improve numbers of native fish, macroinvertebrates, and other aquatic species;

- Maintain or improve desired native plant communities while providing for wildlife/fisheries needs and soil stability;

- Promote a healthy and diverse mix of plant communities and provide a wide spectrum of organisms and ecosystem processes for the needs of plants, animals and humans.

The proposed action is also in conformance with the goals, objectives and actions described in the Preserve March 2008 Final Management Plan (Kleinschmidt 2008), including the Preserve's primary Overarching Goal of:

- Native biological communities and the resident migratory species dependent on them are restored and maintained to sustainable conditions and population levels (p. ES-1).

Tiered under the Overarching Goals is a series of sub-goals (p. ES-2). The sub-goals that are consistent with the proposed project include:

- Protect the free-flowing Cosumnes River within an ecologically functional landscape.

- Protect, maintain, and restore riparian and floodplain communities, the natural hydrologic processes that sustain the habitat, and the native species that depend on the habitat.

- Restore and maintain a population of fall-run Chinook salmon in the Cosumnes River, with an average annual spawning run of 2,000 adults (10-year average, range of 1,000 – 5,000 adults.)

2.0 Proposed Action and Alternatives

2.1 Proposed Action

The BLM is proposing to restore the natural hydrological regime and riparian floodplain habitat and function that once existed at the Cougar Unit. The proposed action would reconnect the historic floodplain habitat and topography to the Cosumnes River through the creation of breaches in the low-lying agricultural levee. The proposed action also would restore some of the historic slough channels that once existed within the "Sink of the Cosumnes," as originally described by Von Schmidt (1859), The complexity of the historic Cosumnes Sink[2] was also described in the *Sacramento-San Joaquin Delta Historical Ecology Investigation: Exploring Pattern and Process* (p. 298), a Delta historical study conducted by the San Francisco Estuary Institute Aquatic Science Center (Whipple, *et al*. 2012) " swamps [laced] with myriad distributaries and flooded annually".

The proposed action would create two intentional levee breaches along the Cosumnes River on the Cougar Unit property. Breach 1 would be located at approximately 38°15'26.86"N, 121°24'00.83"W (WGS84) and Breach 2 would be located at approximately 38°15'17.07"N, 121°24'04.90"W (WGS84) (Please see Appendix A, 90% engineering designs [preliminary]). Both breach widths would be approximately 100 feet wide at the peak of the existing levee, and approximately 12 feet wide at the river's streambed or flow line. Breach 1 would have one channel connecting to the middle lagunita, located on the neighboring BLM Silverado Unit. Breach 2 would have one main channel connecting to the southern lagunita (Appendix A). The maximum depth of the channels would be approximately 9 feet below the current surface elevation.

Some areas along the restored slough channels would be wider than in other areas of the channel to accommodate the BLM's existing women, youth, and mobility-impaired waterfowl hunting program. The widened areas would be equipped with waterfowl hunting blinds and access roads and paths that would be accessible to all participants. The restored slough channels would be engineered to maintain positive drainage in order to prevent the potential for stranding native fish species within the restored channels. Large woody debris would be installed along each main channel to increase bank habitat complexity for native fish and other species, provide a velocity refuge for fish within the channels, provide overhead cover for fish from predators, provide substrate for aquatic invertebrates, contribute to future channel morphology (*e.g.*, formation of pool habitat), and provide basking and perching sites for reptiles and birds (Fischenich and Morrow 2000). An estimated total of 1.4 miles of slough channels would be restored to the "Cosumnes Sink" as a result of the proposed action.

Large culverts (5-foot diameter) would be installed under the north-south access levee road located on the east side of the project site between the Cougar Unit and the Silverado Unit. These culverts would connect the restored slough channels to the lagunitas, thereby allowing for the passive flow of water from the Cosumnes River into the lagunitas. Each culvert would be equipped

[2] While most large rivers emanating from the Sierra Nevada fed directly into the Sacramento River, smaller rivers and creeks often spread into numerous distributary channels across their alluvial fans before dissipating into the wetlands alongside the river. The area encompassing these distributary networks was known as a "sink;" as early narrative accounts describe the streams sinking or losing themselves in the tules. These distributary environments were complex and dynamic places, where floods caused the abandonment of some channels, the formation of new ones, and transported sediment out onto the plain (Whipple, *et al*. 2012).

with manual screw gates that could be closed in order to capture water or prevent water from entering the lagunitas for management purposes. This proposed approach does not precisely replicate the historic overland flows that would have historically filled the lagunitas during flood events before the north-south access levee was created; however, it does, within the confines of modern engineering, simulate a more natural, historic hydrologic condition of these unique, perennial floodplain lakes. The 90% engineering drawings of the project are located in Appendix A.

Approximately 167,800 cubic yards of soil would be excavated at the project site using common earthmoving and heavy construction equipment such as scrappers, excavators, dozers, backhoes, compactors, dump trucks, and truck and transfers, with approximately 110 acres of disturbance. Approximately 95,600 cubic yards of soil would be used on-site to restore more natural floodplain topography. Approximately 72,200 cubic yards of soil would be removed and stockpiled in pre-defined locations on the Preserve (Figure 2, Appendix B). The stockpiles would be used in the future on an as-needed basis to make repairs to levees within the Preserve's managed wetland and agricultural units, as described in more detail below. Removal and transport of the soil would require approximately 3,610 round-trips using truck and transfers as the primary means of transport.

Site Preparation

All managed wetland ponds within the proposed project site would be drained in the spring according to the Preserve's Annual Wetland Operations Plan. The entire project site would remain dry for a minimum of 15 days prior to the start of the proposed project. It is more likely, however, that it will need to be dry for at least 30 days in order to allow heavy equipment to operate safely within the project site. After dewatering and drying, the levee breach and slough channel locations would be cleared and grubbed of all vegetative cover. Best Management Practices (BMPs) for any construction runoff and erosion control including, but not limited to, silt fencing, fiber rolls, gravel bag berms, sandbag barriers, stockpile management, *etc.* would be installed and maintained as necessary and required per the project's Stormwater Pollution Prevention Plan.

Staging Areas and Disposition of Excavated Soil

The primary staging area would be located at 38°15'27.26"N, 121°23"38.13"W (WGS84) centered along the eastern access levee of the Cougar Unit (Figure 2). The primary use of the staging area would be to park or store personal vehicles, project materials, and equipment and equipment cleaning, maintenance and fueling. No stockpiling of excavated material would occur in the staging area.

Excavated soil would be stockpiled temporarily within the proposed project site. Stockpiled materials would be used on site as embankment material or hauled off the site to the pre-determined stockpile locations indicated in Figure 2. The rock aggregate on the crown of the levee roads would be temporarily removed and stockpiled on site for use after the restoration to re-surface the remaining access roads and paths to the hunting blinds. Additional gravel, ballast, and/or road base (*e.g.*, 0.75-1.5-inch crushed gravel and/or ¾-inch AB road base) would be added where needed to further harden the access road and path surfaces. Large woody debris that is removed from the excavation sites would also be stockpiled on site until it is needed for installation within the restored channels.

Several areas on the Preserve have been identified as locations for excavated material that is off-hauled from the proposed project site (see both Figure 2, Appendix B):

- Approximately 8,000-10,000 cubic yards of exported material would be stockpiled for future use by the Preserve at the Farm Center's silage pit, located at the intersection of Bruceville and Desmond Roads. The silage pit is an old, abandoned silage pit that existed at the Farm Center prior to the property being acquired by the BLM.

- About 2,700 cubic yards of excavated material would be stockpiled at the Preserve's McFarland Living History Ranch, located directly east of the Cougar Unit on Orr Road for future use to improve the existing roads, gardens, and agricultural areas at the ranch. See map 3 in Appendix B to see the proposed haul routes into the McFarland Living History Ranch.

- Roughly 14,000 cubic yards of excavated material would be used to raise the south most rice field check in field B-12.

- Approximately 1,300 cubic yards would be used to raise a rice levee between fields B-14 and C-4.

- The remaining estimated +/-43,500 cubic yards of excavated materials would be stockpiled in existing agricultural fields at the Preserve's McCormick-Williamson Tract for later use in an on-going project to re-slope and re-contour that site in preparation for a future levee breech and restoration of tidally influenced freshwater marsh (DWR 2010).

Access & Off-Haul Routes

Two alternatives have been identified to provide temporary construction access and off-haul transportation routes (Figures 2 and 3):

Alternative A. This alternative consists of constructing a temporary dirt roadway from the intersection of Orr Road and the access road to the Cougar Unit around the north side of the Preserve's McFarland Ranch, back on to a 640-foot portion of the BLM's existing access easement to the Cougar Unit, then onto the BLM's Silverado Unit in order to avoid the neighbor's house (minimum 100-foot buffer distance), and finally back onto the BLM's existing access easement to the Cougar Unit (Figure 2). The construction of the temporary road around the McFarland Ranch and on the Silverado Unit would involve using a standard road grader to strip and curl the vegetation and topsoil off to one side of an approximate 12-foot wide road, including turn-out areas to allow vehicles to pass each other. Once the proposed off-haul is completed, the temporary road would be disked to loosen any compaction that occurred during the off-haul and then the stripped vegetation and topsoil would be re-graded onto the surface. Early fall/winter rains would stimulate germination of the naturally occurring seed in the topsoil to re-vegetate the pastureland that was disturbed.

Alternative B. The route for Alternative A is a southern access. The BLM does not own an access easement from Orr Road at this location; however permission for use for the duration of the proposed project has been granted from the landowners. The alternative route consists of a dirt access road from Orr Road around the southern edge of the E&J Gallo vineyard. The access ends at

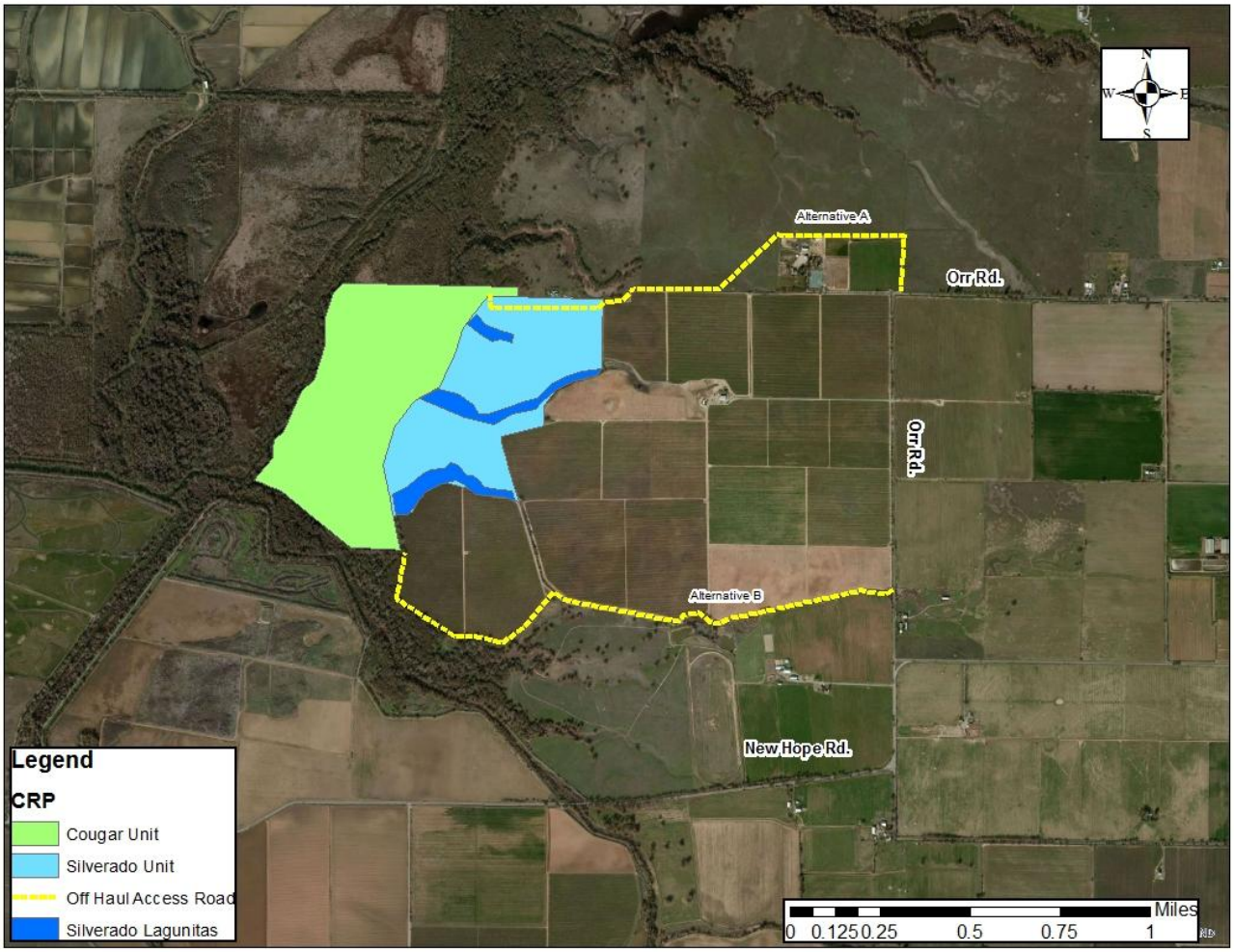

Figure 3. Temporary access and off-haul route alternatives.

the southeastern corner of the Cougar Unit. A ramp will be constructed across a wash at the southeastern corner of the Cougar Unit for vehicle traffic into the project site.

The off-haul routes begin at the project access point on Orr Road. The haul trucks going to the Preserve's McCormick-Williamson Tract would take Orr Road south towards New Hope Road. The trucks would continue west on New Hope Road until the intersection with N. Thornton Road. From that point, the trucks would turn north on N. Thornton Road to the entrance of the McCormick-Williamson Tract (Bean Ranch Road) (Figure 2). Haul trucks transporting material to the Preserve's Farm Center and other locations within the wetland and agricultural rice areas would take Orr Road east to the intersection of Christenson Road. The trucks would then turn north onto Christenson Road and proceed to the intersection of Twin Cities Road. The trucks would turn west onto Twin Cities Road and proceed to the intersection of Bruceville Road, then turn south on Bruceville Road and continue to the Farm Center and/or wetland and rice areas (Figure 2).

Existing Wetland Infrastructure

The existing wetland pump at the Cougar Unit may be removed following the restoration of the floodplain if it is determined that it is no longer needed for irrigation purposes. If the pump was removed, the existing appropriative water right for the Silverado Unit may be abandoned or

transferred through an appropriate request to the State of California. All riparian water rights would be maintained on BLM lands indefinitely.

Schedule

It is anticipated that the project would be initiated June 1, 2014, with all restoration completed by October 31, 2014. Up to 10 equipment operators and other construction personnel would be on-site each day. The workers would access the area via regional and local roads and pre-determined access routes as shown in Figure 2. Work hours typically would be Monday through Friday between the hours of 7:00 a.m. to 7:00 p.m.

2.2 Project Design Features

The BLM, Ducks Unlimited, and their contractors and sub-contractors will follow the design feature measures and best management practices to reduce any potential impact to less than significant. These include:

1. Noise
    a. The contractor will follow the Sacramento County Noise Ordinances to ensure that the noise level does not go over the established maximum A-weighted noise levels described in Section 3 (Noise)
2. Air Quality
    a. The contractor will be required to follow the requirements of Sacramento Metropolitan Air Quality Management District's (SMAQMD) standard mitigation program.
    b. Prior to construction, the contractor will submit a construction equipment list to be used in the project for approval by the BLM, Duck's Unlimited, and SMAQMD. The inventory will include the horsepower rating, engine production year, and projected hours of use for each piece of equipment. The inventory will be updated and submitted monthly throughout the duration of the project.
    c. Diesel-fueled equipment manufactured in 2003 or later will be used, or equipment manufactured prior to 2003 will be retrofitted with diesel oxidation catalysts; use low-emission diesel products, alternative fuels, after-treatment products, and/or other options as they become available.
    d. At least 48 hours prior to the use of subject heavy-duty equipment, the project representative will provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman.
    e. The contractor will ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour. Any equipment found to exceed 40% opacity will be repaired immediately and SMAQMD will be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment will be made at least weekly, and a monthly summary of the visual survey results will be submitted throughout the duration of the project. The monthly summary will include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section will

supersede other SMAQMD or state rules or regulations.

f. Properly function emission control devices will be maintained on all vehicles and equipment. If at the time of construction, the SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with SMAQMD prior to construction will be necessary to make this determination.
g. During construction, the contractor will implement all appropriate dust control measures, such as tarps or covers on dirt piles, in a timely an effective manner.
h. The contractor will periodically water all construction areas having vehicle traffic, including unpaved areas, to reduce generation of dusts. At a minimum, the roads will be watered every half hour to prevent dust damage to grape vines and other nearby agriculture. Application of water would not be excessive or result in runoff.
i. The contractor will suspend all grading, earth moving, or excavation activities when winds exceed 20 miles per hour.
j. The contractor will water or cover all materials transported offsite to prevent generation of dust.
k. The contractor will cover all trucks hauling dirt, sand, soil or other loose material, or maintain at least 2 feet of freeboard (minimum vertical distance between the top of the load and the top of the trailer) in accordance with the requirements of the California Vehicle Code Section 23114. This provision would be enforced by local law enforcement agencies.
l. The BLM will re-vegetate the designated areas cleared by construction in a timely manner to control fugitive dust.

3. Climate Change & Greenhouse Gas Emissions (GHG)
    a. The BLM, DU and their contractors and sub-contractors will improve fuel efficiency from construction equipment by minimizing idling time either by shutting equipment off when not in use or reducing the time of idling to no more than three minutes.
    b. The contractor will maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
    c. Use the proper size of equipment for the job.
    d. The contractor will develop a plan to efficiently use water for adequate dust control prior to construction implementation.
4. Water Quality
    a. All erosion and sediment control measures will be constructed and maintained in accordance with the current editions of the County of Sacramento Improvement Standards (October 2006) and Stormwater Pollution Prevention Plan (SWPPP).
    b. Erosion and sediment control measures for the project will be in substantial compliance at all times with SWPPP prepared for the project in accordance with the State of California General Construction Permit.
    c. Effective erosion control BMPs as defined by the SWPPP will be in place by the contractor prior to any storm events.
    d. Erosion and sediment control BMPs will be installed and maintained by the contractor during the wet season (October 1, 2014 through April 30, 2015).
    e. Sensitive areas and areas where existing vegetation is being preserved will be protected with construction fencing. Sediment control BMPs will be installed by

the contractor where active construction areas drain into sensitive or preserved vegetation areas.

f. All stabilized construction access locations will be maintained on a year round basis by the contractor until the completion of construction.

5. Traffic
    a. The contractor will maintain access for emergency vehicles at all times.
    b. All speed limits, traffic laws, and transportation regulations will be obeyed during construction.
    c. All vehicle speed will be kept at 10 mph or less and vehicle noise will be kept at a minimum along the BLM easement and when within 350 feet of the residences located along the BLM easement.
    d. Signs and flagmen will be used as needed to alert motorists, bicyclists, and pedestrians to avoid conflict with construction vehicles or equipment.
    e. Prior to construction local residents, businesses, schools, and the City of Galt will be notified if road closures would occur during construction.
    f. The contractor will repair roads damaged by vehicle and heavy equipment use by the contractor.
6. Vegetation and Wildlife
    a. After restoration, the open, bare-ground, disturbed areas will first be drill-seeded with a native seed mixture (in approximately October-November) by the BLM. Species that are proposed for planting include creeping wild rye (*Elymus triticoides*), meadow barley (*Hordeum brachyantherum*), blue wildrye (*Elymus glaucus*), California brome (*Bromus carinatus*), gumplant (*Gridelia camporum*), lippia (*Phyla nodiflora*), and spiked bentgrass (*Agrostis exarata*). Of these species, the gumplant, spike bentgrass, and the lippia have had the native seed collected on-site to be grown out at the USDA Plant Material Center to maintain a consistent genetic local ecotype seed source for the post-restoration recovery planting and seeding. The remainder would be provided by a native seed distributor, which would ensure that a local ecotype seed source is being supplied.
    b. Following seeding and the first winter rains, pre-determined areas within the newly restored floodplain would be planted with valley oak acorns and willow (*Salix* spp.) and cottonwood cuttings by the BLM and the Preserve partners. Other tree and shrub species including California wild rose (*Rosa californica*), California blackberry (*Rubus ursinus*), mulefat (*Baccharis salicifolia*), box elder (*Acer negundo)*, elderberry (*Sambucus spp.)*, and Oregon ash (*Fraxinus latifolia)*, all collected from the Preserve, will also be planted during organized restoration workdays.
    c. The contractor will remove (clearing and grubbing) nesting trees, potential nesting habitat, during the non-nesting season.
    d. A pre-construction survey will be performed by the BLM no more than 14 days prior to the commencement of clearing and grubbing activities.
    e. If active nests are found during the pre-construction survey, the contractor will contact the U.S. Fish and Wildlife Service (USFWS) to establish a buffer around the nest tree.
    f. A buffer zone will be marked with flagging, construction lathe, or other means to mark the boundary of the buffer zone. All construction personnel will be notified as to the existence of the buffer zone and to avoid entering the buffer zone during the nesting season.
7. Sensitive Species and Essential Fish Habitat (EFH)

a. Restoration activities that require ground disturbance will take place between May 1st and October 30th (unless early winter rains require the project to be terminated earlier). If activities are expected to occur outside the proposed restoration dates, the local offices of the USFWS and NOAA Fisheries will be contacted by the BLM to determine if additional avoidance and minimization measures are necessary;
b. All seasonally flooded, managed freshwater ponds on the Cougar Wetland Unit will be drained by the BLM and left dry for at least two weeks, if not a month, prior to the start of the restoration work. This includes the draining of the lagunitas on the adjacent Silverado Unit;
c. Twenty-four hours prior to activities that require ground disturbance, the project area will be visually surveyed for GGS by a Service-approved biologist. The survey would be repeated if there is a lapse in activity of more than one week. If a snake is encountered during the survey or during any ground disturbance activity, the biologist will have the authority to stop all activities until appropriate corrective measures have been completed to protect the snake, or it has been determined that the snake will not be harmed;
d. A qualified, Service-approved biological monitor will be available during all activities related to the project. The biological monitor will provide guidance to the project proponents and crew about the federally listed species covered in this consultation and their habitats. The biological monitor will monitor all activities to ensure that no federally listed species is harmed or harassed, and to ensure that the project otherwise conforms to the avoidance and minimization measures outlined in this document and any additional measures set forth in the subsequent Section 7 consultation documents. The biological monitor will have the authority to stop any aspect of the project that will result in unauthorized take of federally listed species;
e. Disturbance to existing grades and vegetation will be limited to the bare minimum necessary within the project site, access routes, and stockpiling areas. Placement of all roads, staging areas, stockpile sites, and other project-related necessities will avoid and limit disturbance to federally listed species and their habitats to the maximum extent practicable. Whenever possible the proposed project has tried to use existing ingress or egress routes to further limit disturbances to the site and potentially occurring species;
f. All standardized Best Management Practices (*e.g.,* per Regional Water Quality Control Boards, the California Stormwater Best Management Practice Handbooks, *etc.*) will be implemented for this project. A Storm Water Pollution Prevention Plan (SWPPP) would be prepared to comply with the requirements of the General Construction NPDES permit. The SWPPP would identify many of the appropriate best management practices to avoid, reduce, and minimize potential water quality impacts.
g. To minimize the effects on anadromous fish and Delta smelt survival caused by the mobilization of sediments, the BLM will require the contractors and sub-contractors to use silt trapping devices during all in-water work, or work where sediment could potentially enter the water. Contractors and sub-contractors will ensure that sediment-control devices are installed and maintained correctly. The devices will be inspected daily to ensure they are functioning properly. Controls will be immediately repaired or replaced or additional controls will be installed as necessary. Sediment that is captured in these controls may be disposed of on site

in an appropriate, safe, approved area, or one of the stockpile areas as described in Section 2.1;

h. Turbidity will be monitored as needed to avoid exceeding thresholds established by the project's water quality waiver agreement with the Regional Water Quality Control Board, as applicable;
i. Large woody debris will be placed by the contractor within the constructed slough banks and channels to provide salmonid habitat. Metal straps will be used to stabilize and hold the large woody debris in place, preventing displacement from water flow and decomposition.
j. Raptor surveys will be conducted following the appropriate California Department of Fish and Wildlife survey protocol prior to the initiation of earth moving activities. A qualified biologist will conduct pre-project surveys to identify nesting areas for Swainson's hawks within 0.5 miles of the proposed project site. If active nests are found, impacts on nesting Swainson's hawks will be avoided to the maximum extent possible by establishing buffer areas around the nests. No project activity will commence within the buffer area until the young have fledged, the nest is no longer active, or until a qualified biologist has determined in consultation with CDFW that reducing the buffer would not result in nest abandonment;
k. Tricolored blackbird and western yellow-billed cuckoo surveys will be conducted at the proposed project site prior to the initiation of earth moving activities. If active nests are found, impacts on nesting tri-colored blackbirds and western yellow billed cuckoos will be avoided to the maximum extent possible by establishing buffer areas around the nests. No project activity will commence within a buffer area until the young have fledged, the nests are no longer active, or until a qualified biologist has determined in consultation with CDFW that reducing the buffer would not result in nest abandonment. Construction buffers may be reduced under the following conditions:
    i. A site-specific analysis conducted by an approved biologist indicates that construction activities would not adversely affect nesting birds.
    ii. Nesting birds do not exhibit significant adverse reaction to construction activities (e.g., changes in behavioral patterns, reactions to noise) based on sufficient monitoring (minimum of 3 consecutive days following construction initiation).
    iii. Additional monitoring will be required any time there is a change in heavy equipment use or activity that results in greater noise levels.
    iv. Monitoring is continued at least once a week through the nesting cycle until the young have fledged and left the nest area.
l. The approved biologist has the authority to stop work at any time if signs of disturbance to the nesting birds are noted. If adverse effects are identified, construction activities will cease immediately and construction will not resume until the appropriate resource agencies have been consulted to determine if construction may continue under modified restrictions, or will be suspended until nesting activity is complete;
m. All machinery will be cleaned using standard high-pressure or steam washing processes once prior to entry to the project site to avoid contamination of the site and surrounding water from grease, oil, and other petroleum products, as well as the potential introduction of invasive plant seeds or plant materials, or other foreign objects or materials;

n. Project participants will exercise every reasonable precaution to protect federally listed species and their habitats from pollution due to fuels, oils, lubricants, and other hazardous or harmful materials. Vehicles and equipment that are used during the course of a project will be fueled and serviced in a "safe" area (*i.e.,* outside of sensitive habitats) in a manner that will not affect species or their habitats. All machinery or vehicles that enter the project site will be properly maintained on a regular basis to avoid contamination to the site or surrounding water from the release of grease, oil, and other petroleum products that are used on the machinery. Spills, leaks, and other problems of a similar nature will be resolved by the contractor immediately to prevent unnecessary effects to species and their habitats. All contractors and sub-contractors will have a plan for the emergency clean-up of any spills of fuel or other material available on site, and adequate materials for spill containment and cleanup will be maintained on site at all times;

o. All construction material, wastes, debris, trash, fencing, portable toilets, *etc.* will be removed from the site by the contractor once the project is completed. Appropriate items will be transported to an authorized disposal area, as appropriate, and per all federal, state, and local laws and regulations;

p. Post-project restoration plantings will be done during the optimal season for the species being planted. A 60% or more survival rate over the first three years for new tree and shrub plantings will be the target. Invasive exotic plant species will be controlled to the maximum extent practicable to accomplish the re-vegetation effort. If chemical control of invasive exotic plant species is deemed necessary, it will be conducted by a certified pesticide applicator per labeled directions and in accordance with the BLM's existing federal, state, and local permits, laws, regulations, NEPA documents, and Section 7 consultation.

8. Cultural Resources

a. A qualified BLM-permitted archaeologist will be retained to monitor for buried archaeological deposits and other unanticipated resources during project implementation (*i.e*., construction/ground disturbance involving heavy equipment). In particular the archaeologist will monitor project implementation within the Cougar Unit. If a post-review discovery is made, the Field Manager and the BLM staff archaeologist will be notified immediately. The area of the discovery will be avoided by construction personnel and equipment, and all applicable procedures (Protocol/Section 106, The Native American Graves Protection and Repatriation Act [NAGPRA], Archaeological Resources Protection Act [ARPA], etc.) will be followed. Construction will not be allowed to resume in the area of the discovery until all applicable procedures are followed and the situation is fully resolved.

b. Cultural resources flagged for avoidance by the BLM archaeologist will be avoided during project implementation. All project managers and project staff will work with the construction contractor(s) to avoid the cultural resources.

c. The BLM and the Preserve will offer the local tribes the opportunity to be a Native American monitor to be present during project implementation.

2.3 No Action

The No-Action alternative serves as the environmental baseline against which the proposed action is compared. Under this alternative, the Cougar Unit would not be converted from managed

seasonal wetland habitat to an active tidally-influenced floodplain with restored slough channels and valley oak riparian forest. The Cougar Unit would remain under the current land management regime. As a result, the current management complications caused by the unpredictable flooding of the Cosumnes River, improper drainage issues; vegetation infiltration, sedimentation, and potential fish-stranding issues would remain and the Preserve's waterfowl hunting program would continue to be operated at the site as it is currently being managed.

2.4 Alternatives Considered but Eliminated from Detailed Analysis

Single-breach Alternative

One intentional breach would be created along the Cosumnes River at the Cougar Unit. The breach would be located at approximately 38°15'26.86"N, 121°24'00.83"W (WGS84), with a width of 100 feet wide at the peak of the levee, and approximately 12 feet wide the river's streambed or flow line. The breach would have a main channel connecting to the three lagunitas located on the neighboring BLM Silverado Unit, with side channels branching off throughout the Cougar Unit. Culverts equipped with a screw gate would connect the main channels to the lagunitas through the access levee road on the east side of the Cougar Unit.

This alternative was not considered to be a viable design since it would provide less value than a two-breach design in terms of slough channel habitat availability and complexity for fish and other species. A single breach design could potentially increase native fish stranding in the floodplain by restricting routes of egress as flood waters recede back into the Cosumnes River and, it results in less linear miles of historic slough channels being restored to the original "Cosumnes Sink."

Shallow Swale Alternative

Two intentional levee breaches would be created along the Cosumnes River at the Cougar Unit. Breach 1 would be located at approximately38°15'26.86"N, 121°24'00.83"W (WGS84) and Breach 2 would be located at approximately 38°15'17.07"N, 121°24'04.90"W (WGS84). Breach 1 would have one channel connecting to the middle lagunita located on the neighboring BLM Silverado Unit. Breach 2 would have one main channel connecting to the southern Silverado Unit lagunita. Both breach widths would be approximately 100 feet wide at the top of the levee and 12 feet wide at the bottom of the swales; however, the breaches would only be cut to the toe of the levee rather than to the bed of the river.

This alternative was not considered to be a viable design since it would not maximize the habitat value and availability to fish during low-flow water conditions, especially if predicted climate change occurs and further alters tidal fluctuations at the proposed project site. During low-flow conditions, for example, the thalweg (lowest part) of the shallow swales may not be inundated with water. This would prevent young-of-the-year juvenile salmon and other fish species from accessing the floodplain habitat where they are able to take advantage of available food resources and cover from predators. This design would also potentially strand native fish in standing pools of water that form naturally on the floodplain with no guarantee of water returning to the swales to create routes of egress back into the Cosumnes River. Additionally, this design alternative would eliminate the youth, women and mobility-impaired hunting program at the proposed project site since within 2-3 growing seasons the shallow swales would be completely occluded with wetland

vegetation, especially since they would never fully dry out enough to allow the use of mechanical means to manipulate the vegetation and there would be no way to continue the hunt program. Since part of the BLM's mandate under the Federal Land Policy and Management Act of 1976, as amended, is to manage "…the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people," eliminating the hunting program on the Cougar Unit would not allow the BLM to fulfill its multiple-use mandate for BLM lands at the Preserve.

No-Slough Alternative

Similar to other levee breach projects that have been conducted on the Preserve, the "no slough" alternative design would intentionally breach the levee in two locations but would not construct a swale or slough channel system throughout the Unit. Breach 1 would be located at approximately 38°15'26.86"N, 121°24'00.83"W (WGS84). Breach 2 would be located at approximately 38°15'17.07"N, 121°24'04.90"W (WGS84). Once the levees were breached the rest of the area within the Cougar Unit would be left alone to restore passively. There would be minimal earthwork; just enough to cut holes through access roads and pond levees, to increase the movement of water across the Cougar Unit during high flow events.

This alternative was not considered a viable design because, while in the long-term it would increase the valley-oak riparian habitat in the Cougar Unit, it wouldn't restore any of the historic slough channels that were once a part of the 'Cosumnes Sink," it would increase the probability of fish stranding events since it does not allow for the removal of the old levees and roads throughout the Cougar Unit, and it would eliminate the waterfowl hunting program since all of the managed wetland ponds would be destroyed by cutting holes through the levees.

3.0 Affected Environment

This section describes the physical, biological, social, and economic resources in the project area and the potential environmental effects of the no action and the proposed action alternatives. When necessary, mitigation measures are also proposed to avoid or reduce any effects to less than significant.

Areas of Critical Environmental Concern

Area of Critical of Environmental Concern (ACEC) are special management areas designated by BLM to protect significant historic, cultural, or scenic values; fish and wildlife resources; natural process or systems; and/or natural hazards that:

- have more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource;
- have qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change;
- has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of Federal Land Management and Practices Act (FLMPA);

- has qualities which warrant highlighting in order to satisfy public or management concerns about safety and public welfare; and/or
- poses a significant threat to human life and safety or to property.

The project area falls within the 2,035-acre Cosumnes River Preserve ACEC. Relevant and important values include the existence or potential for restoration of (1) valley oak (*Quercus lobata*) riparian forest; (2) seasonal wetlands; (3) oak (*Quercus* spp.) savannah; (4) agricultural lands that provide habitat for sandhill cranes (*Grus canadensis*) and a buffer for the Preserve.

Noise

Noise is unwanted or undesirable stationary, transient, intermittent, or continuous sound produced by any activity or device. Noise can cause a disruption of normal activities or cause the quality of physical and emotional health and the over-all quality of life to diminish. The most frequent standard of measuring sound is the "A-weighted" decibel scale, which measures frequencies that can be heard by the human ear. Noise level recorded with the unit measure of dB L_{eq} is the average noise level over a 24-hour time period. Noise level recorded with unit measure of dB L_{dn} is the average noise over one-hour period.

In response to the Noise Control Act of 1972, as amended, the U.S. Environmental Protection Agency (EPA) has identified noise levels requisite to protect public health and welfare against hearing loss, annoyance, and activity interference (EPA 1974). The Sacramento County Noise Ordinance (Sacramento County 2013) pertains only to the un-incorporated areas of Sacramento County. The Ordinance sets limits for exterior noise levels, generally limiting such noises (measured at residential land and agricultural land uses) to a maximum of 55 dBA during any cumulative 30-minute period during the daytime hours (7:00 a.m. to 10:00 p.m.) and 50 dBA during any cumulative 30-minute period during the nighttime hours (10:00 p.m. to 7:00 a.m.). The ordinance sets somewhat higher noise limits for noises of shorter duration; however, noise shall never exceed 75 dBA in the day and 70 dBA at night. Activities conditionally exempt from the noise standards include construction activities that occur during the daytime hours of 6:00 a.m. to 8:00 p.m., Monday through Friday, and from 7:00 a.m. to 8:00 p.m. on the weekend.

There is very little human noise on the Cougar and Silverado Units. The existing noise conditions in the vicinity of the project site are influenced primarily by some surface transportation noise emanating from vehicle traffic on area roadways (*e.g.*, Orr Road) and from agricultural equipment used on neighboring lands and, at times, on the Cougar Unit by the BLM. Additionally, during the fall flood-up, there is noise from the running of the pump. For the most part, the Cougar Unit is very quiet and removed from human-generated noises.

Air Quality

The Cougar Unit is located in the Sacramento Valley Air Basin (SVAB). The SVAB's frequent temperature inversions result in a relatively stable atmosphere that increases the potential for pollution. Sacramento County is within the Sacramento Federal Ozone Nonattainment Area (SFNA). A "non-attainment area" is an area considered to have air quality worse than the National Ambient Air Quality Standards as defined in the Clean Air Act Amendments of 1970. With two exceptions, the SFNA area is in attainment for all state and national ambient air quality standards. The exceptions are that the SFNA is designated a "serious" non-attainment area for the federal eight-

hour ambient air quality standards for ozone, and is also a "serious" nonattainment area for the state one-hour standard. Therefore, as part of the SFNA, Sacramento County is out of compliance with the state and federal ozone standards.

Sacramento County is also designated non-attainment for the state 24-hour PM_{10} ambient air quality standards. The EPA recently reclassified Sacramento County to attainment for 24-hour PM10 and proposes to classify Sacramento County as being in attainment with the new federal $PM_{2.5}$ standard.

Within the SVAB, the SMAQMD is responsible for ensuring that emission standards are not violated. Project related air emissions would have a significant effect if they would result in concentrations that either violate an ambient air quality standard or contribute to an existing air quality violation. Moreover, SMAQMD has established significance thresholds to determine if a proposed project's emission contribution significantly contributes to regional air quality impacts (Table 1). The major sources of emissions related to the proposed project are associated with site grading.

Table 1. SMAQMD Significance Thresholds

	ROG[1] (lbs/day)	NO_x (lbs/day)	CO ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)
Construction (short-term)	None	85	CAAQS[2]	CAAQS
Operational (long-term)	65	65	CAAQS	CAAQS

1. Reactive Organic Gas
2. California Ambient Air Quality Standards

Air quality on the Preserve, and on the Cougar and Silverado Units, is generally good; however because of its proximity to agricultural operations, which entail burning and plowing, as well as major urban areas (Galt, Lodi, Sacramento, Stockton and Elk Grove), higher concentrations of air pollutants may occur in summer and fall, as well as on stagnant, foggy winter days.

Sensitive receptors include those individuals and/or wildlife that could be affected by changes in air quality due to emissions from construction activity. Sensitive land uses in the project area include residences, visitors, and some wildlife taxa.

Climate and Climate Change

Climate. Sacramento and northern San Joaquin Counties have a Mediterranean climate characterized by hot, dry summers and temperate, wet winters. A marine air influence from the Delta region to the southwest moderates the temperature extremes of the Central Valley. During the summer months (June–August), average daily high temperatures are in the mid-90s Fahrenheit (ºF), and average daily lows are in the mid-50. During the winter months (December–February), average highs are in the mid-60s ºF, and average lows are in the high 40s ºF (NOAA 2005).

In most years, virtually all precipitation in the Central Valley falls as rain between November and April. Annual rainfall typically ranges from 22 inches in the lower Cosumnes River watershed to 60 inches in the upper portion of the watershed. Rain and spring snowmelt

cause some level of flooding along the Cosumnes River each year, except during extreme drought conditions. The frost-free season is approximately 360 days annually (NOAA 2005).

Future effects of climate change are a concern, and the potential impacts of climate change are expected to be mostly negative to many of the species that inhabit the Preserve. For example, since the mid-20th century it appears that the pattern of flood timing has shifted toward more frequent early winter flooding with fewer late spring floods as described by water year types. (Booth *et al.* 2006; Stewart *et al.* 2005). Changes in flood timing and duration could affect habitat availability and aquatic productivity of seasonal wetlands on the floodplain (Ahearn *et al.* 2006; Gallo *et al.* 2004; Grosholz and Gallo 2006). Future effects of, and solutions to, climate change may bring challenges, as well as possible opportunities, to the Preserve (Kleinschmidt 2008). Changes in climate (e.g. less rain, more rain, less snow pack, etc.) would potentially have an effect on the tidal influence of the Cosumnes River and the Sacramento-San Joaquin Delta, could affect water availability in the watershed, and the amount of water flowing into the project area during peak and low flow periods.

Climate Change. Currently, NEPA does not have formal guidance on how agencies are required to consider the effects of climate change. On February 18, 2010, the Council on Environmental Quality released draft guidance on the consideration of the effects of climate change and greenhouse gases (GHGs) (CEQ 2010). However, this guidance has not been formalized.

On September 22, 2009, the EPA released its final GHG Reporting Rule. The GHG Reporting Rule is a response to the 2008 Consolidated Appropriations Act (Public Law 110-161), which required EPA to develop "…mandatory reporting of greenhouse gases above appropriate thresholds in all sectors of the economy…" The GHG Reporting Rule would apply to most entities that emit 25,000 metric tons of carbon dioxide equivalents (CO2e) or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The GHG Reporting Rule would also mandate recordkeeping and administrative requirements in order for the EPA to verify annual GHG emissions reports.

On December 7, 2009, the EPA signed two distinct findings regarding GHGs under Section 202(a) of the Clean Air Act:

- Endangerment Finding: the current and projected concentrations of the six key well-mixed GHGs in the atmosphere threaten the public health and welfare of current and future generations. These GHGs are: carbon dioxide (CO2), methane (CH4), NO2, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).
- Cause or Contribute Finding: the combined emissions of these well-mixed GHGs from new motor vehicles and new motor engines contribute to the GHG pollution, which threatens public health and welfare.

The most significant climate change legislation in California is Assembly Bill 32 (AB 32). AB 32 was passed by State Legislature, and signed by Governor Schwarzenegger, in 2006. The law directs the California Air Resources Board (CARB) to begin developing plans to significantly reduce statewide GHG emissions by the year 2020. CARB is required to complete the development of these plans by 2011, with the new rules going into effect on January 1, 2012 (CARB 2010).

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and

rising global average sea level. Global average surface temperature has increased approximately 1.33 °F over the last one hundred years, with the most severe warming occurring in the most recent decades. In the 12 years between 1995 and 2006, eleven of those years ranked among the warmest in the instrumental record of global average surface temperature (going back to 1850). Continued warming is projected to increase global average temperatures between 2 °F and 11 °F over the next 100 years (IPCC 2007).

The causes of this warming have been identified as both natural processes and as the result of human actions. Increases in GHG concentration in the Earth's atmosphere are thought to be the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the Earth and is reflected back into space.

The principle GHGs, as listed in the Federal Regulatory Setting description above, include CO2, CH4, NO2, HFCs, PFCs, and SF6. Each of the principal GHGs has a long atmospheric lifetime (one year to several thousand years). In addition, the potential heat trapping ability of each of these gases vary significantly from one another. Conventionally, GHGs have been reported as CO2e. CO2e takes into account the relative potency of non-CO2 GHGs and converts their quantities to an equivalent amount of CO2 so that all emissions can be reported as a single quantity.

The primary manmade processes that release GHGs include the following: burning of fossil fuels for transportation, heating, and electricity generation; agricultural practices that release CH4, such as livestock grazing and crop residue decomposition; and industrial processes that release smaller amounts of these potential gases, such as HFCs, PFCs, and SF6. Deforestation and land cover conversion have also been identified as contributing to global warming by reducing the Earth's capacity to remove CO2 from the air and altering the Earth's surface reflectance, allowing more solar radiation to be absorbed.

Soils, and Prime and Unique Farmland

The designation of certain soil types as prime farmland is part of a program by the Natural Resources Conservation Service (NRCS). In 1980, the California Department of Conservation initiated the Farmland Mapping Program to supplement the Soil Conservation Service (now known as NRCS) program. The continuing conversion of agricultural lands led to the 1981 passage of the Farmland Protection Act which was amended in 1994. The act outlined the need for all Federal agencies to recognize the effect of their actions and programs on the Nation's farmlands.

Under the Farmland Protection Act, the U.S. Department of Agriculture (USDA) was charged with implementing a program to develop criteria for identifying the effects of Federal programs on the conversion of farmlands to nonagricultural uses. These criteria were published in 1983. The major requirements are (1) Federal agencies must use USDA criteria to identify and take into account the adverse effects of their programs on the preservation of farmland and (2) these agencies must consider alternative actions, as appropriate, to lessen such adverse effects and ensure that their programs, to the extent practicable, are compatible with State, local, and private programs. The act also authorizes local governments to identify farmland of local importance and exempts land already committed to urban development.

Eight soil units have been mapped within the proposed project site (Figure 4 and Table 2, NRCS 2013). There is no farmland on the Cougar Unit. Cattle grazing occurs on the Silverado Unit during the winter rainy season.

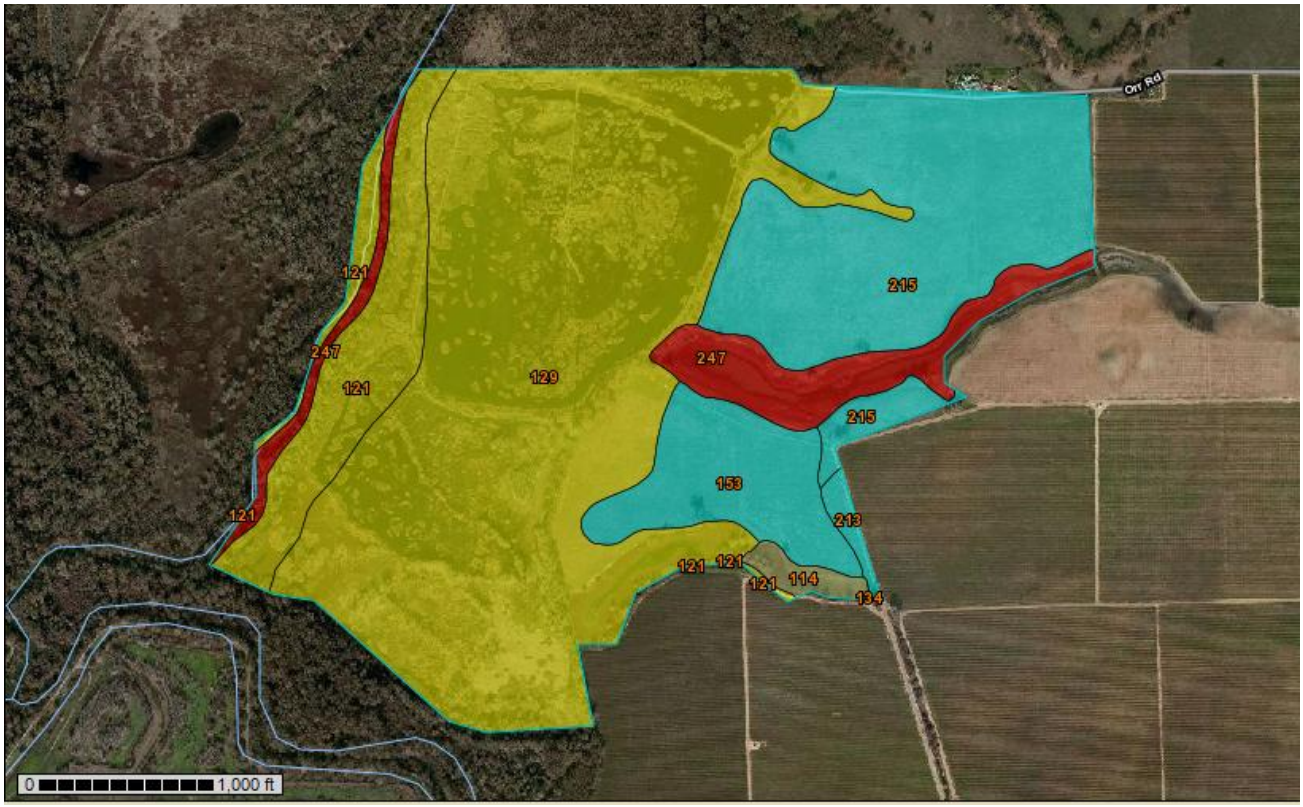

Figure 4. Soils of the Cougar Unit and the Silverado Unit.

Table 2. Soils of the Cougar Unit and the Silverado Unit (NRCS 2013).

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
114	Clear Lake clay, partially drained, 0 to 2 percent slopes, frequently flooded	Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season	2.7	0.90%
121	Columbia sandy loam, clayey substratum, drained, 0 to 2 percent slopes, occasionally flooded	Prime farmland if irrigated	25.1	8.90%
129	Cosumnes silt loam, drained, 0 to 2 percent slopes, occasionally flooded	Prime farmland if irrigated	151.5	53.90%
134	Dierssen sandy clay loam, drained, 0 to 2 percent slopes	Not prime farmland	0	0.00%
153	Galt clay, 2 to 5 percent slopes	Farmland of statewide importance	19.7	7.00%
213	San Joaquin silt loam, leveled, 0 to 1 percent slopes	Farmland of statewide importance	1.7	0.60%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
215	San Joaquin silt loam, 3 to 8 percent slopes	Farmland of statewide importance	61.6	21.90%
247	Water	Not prime farmland	19	6.80%

Water Quality

The Clean Water Act (CWA, 33 USC § 1251) is the Federal law that regulates the discharge of pollutants into navigable waters. State water quality programs and regulations are chiefly the products of Federal mandates put into effect through the CWA and managed by the EPA. The CWA requires states to establish numerical water quality criteria for a host of toxic discharges. In-stream water quality objectives and standards are contained in the State's region-based water quality control plans, more often referred to as basin plans. The Central Valley Regional Water Quality Control Board administers the hydrologic basin and associated basin plans that encompass the proposed project site. In addition to the basin plans, the Central Valley Regional Water Quality Control Board administers the EPA's National Pollution Discharge Elimination System (NPDES) permits and Stormwater Pollution Protection Plan (SWPPP) required by the CWA. In part, this regulation requires that discharges of storm water associated with construction activity disturbing more than one acre is regulated as an individual discharger and must be permitted.

The U.S. Army Corps of Engineers (Corps) regulates structures and work in navigable waters of the U.S. that affect the navigable capacity of such waters under Section 10 of the Rivers and Harbors Act of 1899. The Corps also regulates the discharge of dredged or fill material into all regulated waters of the U.S., including wetlands, under Section 404 of the CWA. The Corps and the EPA both have responsibilities in administering this program and typically, issue permits for these regulated activities.

The major body of water in the vicinity of the project area is the Cosumnes River, the last relatively free-flowing river from the Sierra Nevada Mountains. During the winter, water from the Cosumnes River is pumped onto the Cougar Unit to flood-up and maintain the constructed wetland ponds as seasonal wetland habitat. Under the current management, the seasonal wetlands in the Cougar Unit are generally flooded up starting around September 15. They are maintained flooded throughout the winter, and are generally drawn-down in mid-March to early April. During the winter and spring, floodwater flows over the low levee on the eastern edge of the Cougar Unit into the lagunitas on the Silverado Unit. The existing managed wetlands on the Cougar Unit provide ground recharge areas and allow for the transformation of nutrients and the trapping of sediment while also providing wetland habitat for winter migratory waterfowl and waterbirds.

The Cosumnes River is listed in the CWA 303(d) for a variety of pollutants, including sediment toxicity, and the San Joaquin-Sacramento River Delta downstream is listed as 303(d) impaired for inorganic mercury (SWRCB 2009). The Cosumnes River is a mercury contributor to the Delta, and a primary water quality problem in the Cosumnes River watershed is the presence of inorganic mercury (Hg) and the production of methylmercury (MeHg) and its export to the Sacramento-San Joaquin Delta (Wood *et al.* 2010). Historic gold mining in the upper Cosumnes River watershed have resulted in extensive Hg contamination within the Cosumnes River sediment. This Hg contamination may facilitate MeHg production in managed wetland habitat

within the lower Cosumnes River watershed (*e.g.*, Marvin-DiPasquale *et al.* 2007, Ahearn *et al.* 2004). On-going and future efforts to restore more wetland acres in the watershed may help to achieve statewide habitat goals to double Delta wetland and floodplain habitats (Bay-Delta Conservation Plan 2009; Central Valley Joint Venture 2006); however, this also has the potential to further increase MeHg loading to the downstream Sacramento-San Joaquin Delta.

Other water quality concerns along the lower Cosumnes River are high levels of nitrogen, phosphorus, suspended sediments, and mercury (Conaway *et al.* 2007). The overall water quality of the Cosumnes River, and thus the water in the Cougar Unit, is variable depending on the season and flow of the river. For example, nitrate averages 1.7 ppm at the Twin Cities crossing, just upstream of the project location and pump intake, dissolved salts (specific conductivity) is very seasonal, ranging from 59.6 µS/cm to 142.0 µS/cm (Ahearn and Dahlgren 2001). The total suspended sediment (TSS) of the river tends to have higher total suspended solids in the downstream reaches than the upstream reaches due to finer sediment and agricultural practices in the lower basin. The river at the Twin Cities crossing has a median TSS of 28.5 mg/l, whereas the TSS upstream in the Middle Fork Cosumnes is 2.5mg/l (Ahearn and Dahlgren 2001).

Hydrology

The Cougar Unit is located along the eastern bank of the Cosumnes River, just above the confluence of Bear and Grizzly Sloughs, which both convey water from Dry Creek to the Cosumnes River. A short distance downstream from the Cougar Unit, the Cosumnes River joins the Mokelumne River as it flows into the Sacramento-San Joaquin Delta. Both the Cosumnes River and Dry Creek are by and large unregulated; such that flood pulses occur in response to precipitation events occurring within the watersheds (CBEC 2013). Along the water courses private levees were constructed previously to enable agriculture to occur on the floodplains; these levees reduce the connectivity between Cougar Unit and the Cosumnes River. Across the Cosumnes River to the west, levee breaches have been created intentionally and unintentionally and passive restoration/rehabilitation of floodplain topography and riparian vegetation have resulted successfully over time. Due to a combination of large, natural runoff events and limited channel capacity downstream, the area surrounding the proposed project site floods frequently and has been referred to as the "Franklin Road Pond" (CBEC 2013, USACE 1990).

Traffic

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways in Sacramento County. Caltrans enforces various policies and regulations related to the modification of or encroachment on state-owned roadways.

Streets in the project area are county roads. Sidewalks do not exist in the proposed project area since it is located in a rural environment. The nearest residences are located approximately 1,500 feet from the project. Roadways included in the haul route include: Orr Road, New Hope Road, Thornton Road, Bean Ranch Road, Franklin Blvd., Desmond Road, Bruceville Road, Twin Cities Road (CR-E13), and Christensen Road. Traffic on these roads includes private automobiles, light and heavy (semi-trucks) commercial vehicles, delivery/service vehicles, farm equipment, and bicycles. Traffic volume on these roads peak during the morning and evening rush hours and reduces in volume during the middle of the day.

The nearest major road to the project area is State Route-99. The highway is a major, four-lane urban roadway that is a traffic artery that parallels I-5, connecting urban and metropolitan areas. SR-99 is outside of the project area but would be used to access the project area during construction. Types of traffic on SR-99 include private automobiles, light and heavy commercial vehicles, semi-truck trailers, emergency vehicles, and buses. Traffic volume on SR-99 peaks during the morning and evening rush hour and becomes a steady but lower volume during the day.

Pedestrian traffic is low to non-existent on all of the above listed roads within the project area, with the exception of along Thornton Road and Franklin Blvd. Residents of Thornton often walk along the roadside of Thornton Road, and visitors of the Preserve use the marked crosswalks on Franklin Blvd. near the Visitor Center. Recreation traffic in these areas is moderate throughout the day.

Sacramento County posts traffic counts on the website for roadways in the project area. The average daily traffic (ADT) on Twin Cities Road near the I-5 intersection was 4,500 vehicles in 2012 (BDCP 2013). The ADT count at Franklin Blvd, south of Desmond Road was 627 vehicles on June 12, 2012. The ADT count on New Hope Road, west of Kost Road was 1,660 on June 2, 2010. This information was the most current information available for these locations, and represents the number of vehicles travelling throughout the project area during a 24 hour period on an average day, considered to be Tuesday, Wednesday, or Thursday (Sacramento County 2013a).

Vegetation and Wildlife

Vegetation. The freshwater emergent marsh at the Cougar Unit is dominated by a handful of perennial herbaceous species. Most area is covered by natives such as cattail (*Typha latifolia*), tule (*Schoenoplectus acutus* and *Schoenoplectus californicus*), and smartweed (*Polygonum* spp.) Large monocultures of the non-native Uruguayan water primrose (*Ludwigia hexapetala*) have become established near the eastern portions of the southern-most pond.

The early-successional riparian forest at the Cougar Unit is comprised of Fremont's cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), box elder (*Acer negundo*), and willows (largely sandbar (*Salix exigua*), with some arroyo (S. *lasiolepis*), black (S. *gooddingii*), and Pacific (S. *lasiandra*). Young valley oak trees (*Quercus lobata*) may also be present. The older riparian forest can be better delineated into different strata. It has mature valley oak trees in the overstory, with smaller trees and large shrubs in the midstory, low shrubs in the understory, and sometimes a ground layer of herbaceous plants. Close to the river, the midstory plants include large Oregon ash and box elder trees, and the understory is dominated by Himalayan blackberry (*Rubus armeniacus*). The blackberry typically excludes any plants in the ground layer. On the drier eastern property edge, isolated Oregon ash forms a sparse midstory, with a vigorous understory of redstem dogwood (*Cornus sericea*), California rose (*Rosa californica*), and poison oak (*Toxicodendron diversilobum*). The ground layer contains significant stands of creeping wild rye (*Elymus triticoides*), a native perennial grass. Non-native species include white sweetclover (*Melilotus albus*), Italian ryegrass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum*), and perennial pepperweed (*Lepidium latifolium*).

High plant species diversity occurs on road surfaces, but the assemblage does not fit cleanly into a single vegetation type. The hydrology of the site prevents the widespread establishment of the

usual ruderal species seen on roadsides in the region. Compared to the rest of the site, the roads harbor high wildflower diversity, although most species are non-native. Common non-natives include seashore vervain (*Verbena litoralis*), slender centuary (*Centaurium tenuiflorum*), sweet clover (*Melilotus* spp.), bird's-foot trefoil (*Lotus corniculatus*), dog fennel (*Anthemis cotula*), narrowleaf plantain (*Plantago lanceolata*), bristly ox-tongue (*Helminthotheca echioides*), and bull thistle (*Cirsium vulgare*). Despite high non-native species richness, the loop around the north pond of the managed wetland is the only place on the entire Preserve known to harbor a dense, persisting stand of meadow barley (*Hordeum brachyantherum*), and a native perennial grass. It is unknown whether the seed that started this stand came from naturally occurring populations nearby or from the grassland restoration on the adjacent property to the east, where meadow barley was heavily seeded. This species' persistence may be due in part to anthropogenic influence that reduces competition, potentially including late-season mowing (mid- to late June). Additional native plants only occurring on the roads include lippia (*Phyla nodiflora*), beethistle (*Eryngium articulatum*), whitehead navarretia (*Navarretia leucocephala*), and woolly marbles (*Psilocarphus tenellus N*utt. var. *tenellus).*

Wildlife.

Many of the species that commonly occur at the Cougar Unit are not specifically managed for as part of the Preserve's overall management strategy. However, these species benefit from habitat that is created, restored or preserved as part of the Preserve's projects and continued management. These species include several species of waterfowl and waterbirds, passerines such as willow flycatcher (*Empidonax traillii*), tree swallows (*Tachycineta bicolor*), and marsh wren (*Cistothorus palustris*), black tailed deer (*Odocoileus hemionus)*, river otter (*Lutra canadensis*), California vole (*Microtus californicus*), beaver (*Castor canadensis*), American bittern (*Botaurus lentiginosus*), redwing blackbird (*Agelaius phoeniceus*), western fence lizard (*Sceloporus occidentalis*), common kingsnake (*Lampropeltis getulus*), and muskrat (*Ondatra zibethica*), and several species of bats.

Migratory Birds. Migratory birds and their habitats are protected under the Migratory Bird Treaty Act (MBTA), as amended (16 U.S.C703 et seq.) Several migratory birds, including waterfowl, shorebirds, song birds, hummingbirds, vultures, and raptors commonly are found around the Cougar Unit. Waterfowl and songbirds, in particular, have the potential to utilize tree and shrub habitat located within the project area, including the wood duck (*Aix sponsa*), marsh wren (*Cistothorus palustris*), tree swallows (*Tachycineta bicolor*), black phoebe (*Sayornis nigricans*), and golden-crowned sparrow (*Zonotrichia atricapilla*). Raptors that are found and observed in the area include great-horned owl (*Bubo virginianus*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), and Swainson's hawk (*Buteo swainsoni*).

Fisheries. Forty-three species are known, or have been known, to inhabit the Cosumnes River. Of these, six are anadromous and spend a part of their life cycle in the Lower Cosumnes River. The fish species that inhabit the Lower Cosumnes River are shown in Table 3.

Table 3. Fish species found in the Cosumnes River and Cosumnes River Preserve (CRP 2013).

Common Name	Scientific Name	Native	Confirmed at CRP	Likely Extirpated
American shad	*Alosa sapidissima*		x	
Bigscale logperch	*Percina caprodes*		x	
Black Bullhead	*Ictalurus melas*		x	
Bluegill	*Lepomis macrochirus*		x	
Brook trout	*Salvelinus fontinalis*			
Brown bullhead	*Ameiurus nebulosus*		x	
Brown trout	*Salmo trutta*			
California roach	*Lavinia symmetricus*	x		
Carp	*Cyprinus carpio*		x	
Channel catfish	*Ictalurus punctatus*		x	
Chinook salmon	*Oncorhynchus tshawytscha*	x	x	
Crappie (black)	*Pomoxis nigromaculatus*		x	
Crappie (white)	*Pomoxis annularis*		x	
Delta smelt	*Hypomesus transpacificus*	x		
Fathead minnow	*Pimephales promelas*		x	
Golden shiner	*Notemigonus crysoleucas*		x	
Goldfish	*Carassius auratus*		x	
Green sunfish	*Lepomis cyanellus*		x	
Hardhead	*Mylopharadon conocephalus*	x		x
Hitch	*Lavinia exilicauda*	x	x	
Inland silverside	*Menidia beryllina*		x	
Largemouth bass	*Micropterus salmoides*		x	
Western Mosquitofish	*Gambusia affinis*		x	
Pacific lamprey	*Lampetra tridentate*	x	x	
Prickly sculpin	*Cottus asper*	x	x	
Rainbow trout/Steelhead	*Oncorhynchus mykiss*	x		
Redear sunfish	*Lepomis microlophus*		x	
Redeye bass	*Micropterus coosae*		x	
Riffle sculpin	*Cottus gulosus*			x
Sacramento pikeminnow	*Ptychocheilus grandis*	x	x	
Sacramento blackfish	*Orthodon microlepidotus*	x	x	
Sacramento sucker	*Catostomus occidentalis*	x	x	
Smallmouth bass	*Micropterus dolomieu*		x	
Speckled dace	*Rhinichthys osculus*			x
Splittail	*Pogonichthys macrolepidotus*	x	x	
Spotted bass	*Micropterus punctulatus*		x	
Striped bass	*Morone saxatilis*		x	
Threadfin shad	*Dorosoma petenense*		x	

Common Name	Scientific Name	Native	Confirmed at CRP	Likely Extirpated
Tule perch	*Hysterocarpus traski*		x	
Wagasaki	*Hypomesus nipponensis*		x	
Warmouth	*Lepomis gulosus*		x	
White catfish	*Ameiurus catus*		x	
White sturgeon	*Acipenser transmontanus*	x	x	

Special Status Species

Certain special-status species and their habitats are protected by Federal, State, or local laws and agency regulations. The Federal Endangered Species Act (ESA) of 1973 (7. U.S.C § 136, 16 U.S.C § 1531 et seq.) provides legal protection for plant and animal species in danger of extinction. This act is administered by USFWS and the National Marine Fisheries Service. The California Endangered Species Act (CESA) of 1977 parallels the ESA and is administered by the California Department of Fish and Wildlife (CDFW). The plant and animal species protected under the ESA and CESA are listed as endangered, threatened, or, in the case of plants, rare.

In addition to formal lists of endangered and threatened species, the Federal and State agencies also maintain lists of species of special concern based on factors such as limited distribution, declining population size, and diminishing habitat acreage or value. Also, the BLM maintains a list of taxa that are BLM designated Sensitive Species. Species of special concern are not afforded the same legal protection as listed species, but may be added to official lists in the future. The two general categories of special interest species include species that are candidates for listing as threatened or endangered, and species that are not candidates for listing, but have been unofficially identified as species of special interest by private conservation organizations or local government agencies.

Special-status species are those that meet any of the following criteria:

- Listed or candidate for listing under ESA.
- Listed or candidate for listing under CESA.
- Plants or animals designated by the BLM as Sensitive Species.
- Nesting bird species and active nests of birds listed under the Migratory Bird Treaty Act.
- Species listed in the Bald and Golden Eagle Protection Act.
- Fully protected or protected species under the California Fish and Wildlife *California Code of Regulations, Title 14 (Natural Resources)*.
- Species of concern that have the potential to occur in the project area due to suitable or marginal habitat existence for those species, as identified by USFWS.
- Species of special concern listed by CDFG that have the potential to occur in the project area because suitable or marginal habitat may exist for those species.
- Plant species listed as "rare" under the California Native Plant Protection Act (CDFG Code, Section 1900 *et seq*.).
- Plant species listed by the California Native Plant Society to be rare, threatened, or endangered in California. The purpose of the California Native Plant Society is to call attention to the status of a species that is experiencing decline, but is not afforded legal

protection.

Special-status species that have the potential to occur in the vicinity of the project area were determined through a review of various sources, including the USFWS species list, the California Natural Diversity Database Rarefind, Version 3.1.0 (CDFG 2013), and the California Native Plant Society Inventory of Rare and Endangered Plants, 7th edition (CNPS 2010). The special-status species obtained through these sources were consolidated and listed in the Biological Assessment.

Each species on the list was evaluated for its potential to occur within the project areas. Species that are not found in the land cover types present in the project area, or whose known range falls outside the project area were eliminated from further consideration. Those special-status species that are known to occur or have the potential to occur within the project area were further evaluated in the Cosumnes River Preserve Cougar Floodplain Restoration Project Biological Assessment (BA). A copy of the BA (BLM 2013) and the complete administrative record is on file.

Vegetation.

No special-status plant species were identified as having the potential to occur in the project area, or is known to occur in the project area.

Wildlife.

Ten special-status wildlife species were identified as having the potential to occur in the project area or are known to occur in the project area (Table 4).

Table 4. Special status species.

Common Name	**Species**	**Known Occurrence or Potential**	**USFWS/NOAA**	**CDFW**	**BLM**
Valley Longhorn Elderberry Beetle	*Desmocerus californicus dimorphus*	Elderberry shrubs are typically common in riparian habitat; however, there are none on the Cougar Unit. Due to the absence of elderberry shrubs on site suitable habitat does not occur	Threatened	None	
Western Pond Turtle	*Clemmys marmorata*	Known to occur on Preserve in many locations, including wetland areas.	Species of Concern		Sensitive Species
Tricolored Blackbird	*Agelaius tricolor*	Known to historically nest on the Preserve. Currently they are migratory only; however habitat is being developed specifically for the TCB.		Special Concern	Sensitive Species

Common Name	Species	Known Occurrence or Potential	USFWS/NOAA	CDFW	BLM
Western Yellow-billed Cuckoo	*Coccycus americanus*	Known to occur at Preserve, however transitory.	Candidate species	Endangered	Sensitive Species
Swainson's Hawk	*Buteo swainsoni*	Known to occur seasonally.		Threatened	Sensitive Species
Greater Sandhill Crane	*Grus canadensis tabida*	Known to occur seasonally.		Threatened	Sensitive Species
Sacramento Splittail	*Pogonichthys macrolepidotus*	Known to occur in the Cosumnes River		Special Concern	
Giant Garter Snake	*Thamnophis gigas*	Known to occur on the Preserve, however the closest occurrence is ~5 miles from Unit.	Threatened	Threatened	
Delta Smelt	*Hypomesus transpacificus*	Potential to occur in Cosumnes River.	Threatened	Endangered	
Central Valley Evolutionarily Significant Unit (ESU) fall-run (and late fall-run) Chinook salmon	*Oncorhynchus tshawytscha*	Known to occur in the Cosumnes River	Species of Concern		
Central Valley Distinct Population Segment (DPS) steelhead	*Oncorhynchus mykiss*	Known to occur in the Cosumnes River	Threatened		

For a complete description and environmental baseline of each special-status species, the natural history of each species, and the potential for impact, please refer to the project's Biological Assessment.

Essential Fish Habitat. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) of 1996 govern the conservation and management of ocean fisheries. The purpose of the Act is to take immediate action to conserve and manage fishery resources off the U.S. coasts and U.S. anadromous species, and promote the protection of Essential Fish Habitat (EFH).

EFH is the aquatic habitat (water and substrate) necessary for fish to spawn, breed, feed, or grow to maturity (PFMC 1999) that will allow a level of production needed to support a long-term, sustainable commercial fishery and contribute to a healthy ecosystem. For the lower Cosumnes River, the EFH for Chinook salmon is within the USGS hydrologic unit code[3] 18040005 (L. Cosumnes – L. Mokelumne).

[3] To clearly identify watersheds that contain EFH, NOAA Fisheries uses fourth field hydrologic unit codes (HUCs) developed by the USGS (defined in the Department of the Interior, USGS publication; Hydrologic Unit Maps, Water Supply Paper 2294, 1987). The geographic extent of HUCs range from first field (largest geographic extent) to sixth field (smallest geographic extent). Fourth field HUCs divide the landscape into distinct geographic areas that are identified by eight numbers unique to that hydrologic unit.

Recreation

The BLM manages scattered public lands in the foothills of the central Sierra Nevada as well as within the Central Valley, including at the Cosumnes River Preserve. Some of these lands provide excellent recreational opportunities such as boating, swimming, hiking, fishing, and hunting. Hunting is a popular recreational activity on public lands managed by the BLM, though the BLM has had to restrict, and sometimes prohibit, hunting/firearms use in some of the most popular and scenic areas, such as BLM-administered land within the Preserve, to prevent conflicts among users and to protect sensitive environmental resources. Some members of the hunting public such as mobility impaired hunters have been historically underrepresented during the hunting season. The BLM annually issues a Special Recreation Permit (SRP) to a qualified and competitively selected organization to administer the Preserve's Waterfowl Hunting Program located on the Cougar Unit. The purpose of this hunting program is to provide a quality hunting experience for individuals who otherwise might not be able to hunt, specifically women, apprentice, and mobility-impaired hunters.

Visual Resources

The BLM manages the project area in accordance with class II visual resource management (VRM) standards. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

The visual character of the Lower Cosumnes River and the Cougar Unit is quite varied. The presence of a river in an area that is cool and moist in the spring and hot and dry in the summer creates striking visual scenery of valley oak riparian forest, upland grasslands and pastures, and vineyards.

Cultural Resources

The primary authority is Section 106 of the National Historic Preservation Act (NHPA). Under Section 106 of the NHPA, federal agencies such as the BLM are required to consider the effects of their undertakings on historic properties – those cultural resources (sites, structures, buildings, objects, districts, traditional cultural places) that are eligible for, or listed on, the National Register of Historic Places. Section 106 of the NHPA is implemented by regulations at 36 CFR 800. Since the proposed action would involve federal land (administered by the BLM) and would require federal authorizations (by the BLM and the Corps), the proposed action constitutes an undertaking as defined in Section 301(7) of the NHPA, and is subject to review under Section 106 of the NHPA and its implementing regulations. The BLM Mother Lode Field Office uses the State Protocol Agreement (Protocol) among the BLM California State Director and the California State Historic Preservation Officer and Nevada State Historic Preservation Officer (revised in 2012) to meet its requirements under Section 106 of the NHPA (for those undertakings not exceeding the thresholds in Section VI of the Protocol). In reviewing this case, the BLM has found that the Section VI thresholds have not been exceeded and therefore review of the undertaking will move forward under the Protocol (Barnes 2013a). Other relevant and applicable authorities include the NEPA, Federal Land Policy and Management Act (FLPMA), Native American Graves Protection and Repatriation Act (NAGPRA), and Archaeological Resources Protection Act (ARPA). Compliance with NEPA

and FLPMA is discussed herein. NAGPRA and ARPA would apply only in situations where statutorily defined "cultural items" and/or "archaeological resources" are discovered on federal lands during project implementation and need to be removed, pursuant to NAGPRA procedures at 43 CFR 10, ARPA procedures at 43 CFR 7, and the post-review discovery provisions of the Section 106 regulations and the Protocol.

The project area is located on the eastern fringe of the Sacramento-San Joaquin Delta. The event most significant to the social, economic, political, and environmental history of this region is the near wholesale conversion of the Delta since the Gold Rush from a natural system of waterways, mashes, and floodplains affected by the annual cycle of snowmelt runoff and drought, to a patchwork of farmlands, urban centers, and transportation/infrastructure networks with seasonal flows heavily regulated by dams, levees, and other structures. Themes associated with the Delta before this massive conversion (aka reclamation) include prehistoric settlement/occupation, early European and Euro-American contact (Spanish exploration, trapper exploitation, and settlement), Native American responses to this intrusion, and the Gold Rush (circa 1848 to 1858).

The lower Cosumnes River (but not the project area specifically) was the subject of the some of the earliest systemic archaeological investigations in the state, by the University of California and Sacramento Junior College during the 1920s and 1930s. Early research in this area is notable for its heavy focus on burials and associated grave goods in large mounded sites. It is also notable for training some of California's most influential archaeologists (i.e., Robert Heizer) and profoundly affecting the course of later archaeology in the region.

By the 1980s the prehistoric chronology for Central Valley had undergone serious revision, reflecting changes in archaeological theory and method, academic debate, and further field investigations especially to the east near the Diablo Range. The Central Valley's prehistoric archaeological record was described in terms of "patterns" (broad adaptive mode) broken into smaller units called "phases" or "aspects." These patterns included the Windmiller, Berkeley, and Augustine. The Windmiller pattern (named after the type site the Windmiller mound CA-SAC-127) dates from 2500 BC to 500 BC and was known for a distinctive burial complex with skeletons often extended ventrally and oriented toward the west. The Berkley pattern dated from roughly 500 BC to AD 1000. The Augustine pattern, dating from AD 1400 to historic contact, was associated with new technologies such as the bow and arrow. The Augustine pattern is thought to be related to Penutian-speaking groups (i.e., Wintu, Plains Miwok, Yokuts, etc.) that migrated into the Central Valley, from the north.

More recently archaeologist Jeff Rosenthal and colleges have reevaluated Central Valley archaeology. They note little archaeological progress in the region since the 1980s and attributed this to a lack of large-scale cultural resource management projects and PhD dissertation research as well as ongoing difficulty in locating archaeological deposits that predate Windmiller (roughly 4500 years before present) since they are likely buried due to geomorphic processes. The San Joaquin Valley remains the least understood portion of the valley while the Sacramento Valley less so. Rosenthal et al. have proposed a revised cultural chronology that takes into account the entire period of probable human occupation in the Central Valley, beginning in the late Pleistocene more than 12,000 years ago: Paleo-Indian, Lower Archaic, Middle Archaic, Upper Archaic, and Emergent. The late Pleistocene and early Holocene (Lower Archaic) remain relatively unknown. The Middle Archaic, Upper Archaic, and Emergent roughly correspond to the Windmiller, Berkeley, and Augustine patterns.

By historic contact, Plains Miwok speakers occupied the general area. Their political formation was the triblet (a concept defined by UC Berkeley anthropologist Alfred Kroeber to describe the California culture area) which consisted of one or more principal villages and associated satellite settlements within a circumscribed territory. The territory of the Cosomne triblet may have included project area lands along the lower Cosumnes River.

Spanish exploration of the interior including the Delta started in 1772 and was related to Spanish colonial settlements and missions along California's coast and costal interior valleys. The purpose was to find suitable places for mission sites but, more often than not, expeditions spent time tracking down runaway neophytes, recovering rustled livestock and horses, and punishing raiders. Fur trappers also entered the Central Valley during the early 1800s. Possibly the first was Jedediah Strong Smith in 1827-28, followed by the McLeod and Ogden brigades in 1828-30 and the Laframboise and Work brigades in 1832-33.

California came under Mexican rule after Mexico gained independence from Spain in 1821. The Franciscan missions were secularized by the Mexican government in 1834. After this time the Mexican government began awarding large land grants in California, possibly to help prevent a U.S. takeover. There were twelve grants in the eastern Delta region, from the Calaveras River north to the American River – the most prominent of which was John Sutter's New Helvetia at present-day Sacramento. Portions of the project area are located within the Rancho Sanjon de los Moquelumnes land grant petitioned for by Anastocio Chabolla in 1844. Chabolla and his family never occupied this land grant (which had title problems from the start) and following the Gold Rush, it became mired in complex litigation that was not resolved until well into the 1870s. Among the numerous litigants claiming title to portions of the grant include landowners in and around the project area (and prominent Galt residents and founding fathers) including Obed Harvey, John Brewster, Andrew Whittaker, and John McFarland.

Spanish colonial activities, fur trapper expeditions, and later Mexican-era settlement (land grants such as John Sutter's New Helvetia), not to mention the influx of settlers during the Gold Rush beginning in the late 1840s, disrupted and, despite native resistance, was ultimately devastating to Plains Miwok societies both culturally and demographically.

Themes relevant to understanding the area after the Gold Rush include large-scale reclamation (i.e., hydrographic problems and solutions, public policy/legislation, reclamation sequence, reclamation methods, the labor force and equipment of reclamation), land uses (i.e., agriculture, oil and gas production, etc.), and transportation and town development. The history of the project area reflects many of these themes. Road building and reclamation (levee construction) for intensive crop farming by absentee landowners (or their agents and lessees) was commonplace, especially in the fertile lowlands of Cougar wetland, areas of south of the Farm Center, and the McCormack-Williamson tract. Residential occupancy and domestic activities appear to have been uncommon short-lived in these areas after the Gold Rush, perhaps due to flooding. Long-term occupancies and domestic activities related to farming and ranching occurred in and around the project area at the McFarland Ranch by John McFarland and his descendants (from at least the late 1870s to the 1990s) and at what is today known as the Farm Center by the Kerth family (from at least 1869 to the 1890s) and the Nicolaus family (from the 1890s to the 1940s).

4.0 Environmental Effects

The following critical elements have been considered for this environmental assessment, and unless specifically mentioned later in this Environmental Assessment, have been determined to be unaffected by the proposal: air quality, areas of critical environmental concern, prime/unique farmlands, floodplains, water quality, threatened or endangered species, hazardous waste, wetlands and riparian zones, wild and scenic rivers, wilderness, and invasive nonnative weeds.

4.1 Impacts of the Proposed Action and Alternatives

Areas of Critical Environmental Concern

Proposed Action. The proposed action would not adversely impact floodplains, wetlands and riparian zones, and the relevant and important values for which the area was designated an ACEC.

Access Roads. The proposed access roads (Figures 2 and 3) would not adversely affect floodplains, wetlands and riparian zones, and the relevant and important values for which the area was designated an ACEC.

Mitigation

As there would be no impacts on ACEC, no mitigation is needed.

Noise

Proposed Action. Construction activities from the proposed action, such as the excavation and off-haul of soil, would temporarily increase the noise levels near the proposed project site and within the proposed project area. Vehicles currently use the roadways within the proposed project area to do routine operation and maintenance activities at the Cougar Unit; however the transport trucks and construction equipment vehicles could result in higher levels of noise within the project area. The few neighbors and agricultural workers near the Unit and the wildlife in the vicinity of the Unit could be disturbed by the noise. However, the restoration would be completed within two to three months and the size and method of construction would not be expected to produce enough noise to adversely affect sensitive receptors in the project area.

Access Roads. Truck and equipment noise would temporarily increase the noise levels on both access roads. However, Alternative A has two sensitive receptors along the route (McFarland Living History Ranch and two residences), while Alternative B has no sensitive receptors along the route.

Mitigation

Please refer to Section 2.2 of this document for measures. Compliance with these measures would minimize short-term construction noise effects on sensitive receptors to less than significant.

Air Quality

Proposed Action. Short-term air quality impacts would be due to dust (PM_{10}) generated by construction and development activities, and emissions from equipment and vehicle engines (NO_x) operated during the proposed restoration activities. Dust generation is dependent on soil moisture as well as the amount of total acreage actually involved in clearing, grubbing and grading activities. Clearing and earthmoving activities comprise the major source of construction dust generation, but traffic and general disturbance of the soil also contribute to the problem. Fine particulate materials may be used during construction, and stored on-site. If not stored properly, such materials could become airborne during periods of high winds. The effects of construction activities include increased dust fall and locally elevated levels of suspended particulates. PM_{10} is considered unhealthy because the particles are small enough to inhale and damage lung tissue, which can lead to respiratory problems.

The SMAQMD "Guide to Air Quality Assessment in Sacramento County" (December 2009, as amended, hereinafter called the SMAQMD Guide) contains screening thresholds for significant impacts. Some PM_{10} emissions during project construction would be reduced through compliance with institutional requirements for dust abatement and erosion control. These institutional measures include the SMAQMD "District Rule 403-Fugitive Dust" and measures in the Sacramento County Code relating to land grading and erosion control [Title 16, Chapter 16.44, Section 16.44.090(K)]. Dispersion modeling conducted for projects of various sizes has resulted in the conclusion that projects involving more than 15 acres of active grading *at any one time* will result in significant impacts, even with standard dust abatement measures. The text is emphasized to note that the screening threshold does not speak to the total project area, but to the largest total area that will be actively graded at any given time.

Although the project site is approximately 240 acres, the entire acreage would not be graded. Approximately 110 acres would be disturbed, but not all at one time. Unless a site is quite small, a contractor typically hires enough equipment to actively grade a portion of the site each day, rather than contracting for enough equipment to grade the site all during the same day. No more than 25 percent, or 15 acres, of the project area would be graded at one time. The SMAQMD Guide includes a list of Basic Construction Emissions Control Practices that should be implemented on all projects, regardless of size. Dust abatement practices are required pursuant to SMAQMD Rule 403 and California Code of Regulations, Title 13, sections 2449(d)(3) and 2485; the SMAQMD Guide simply lays out the basic practices needed to comply. Since these are already required by existing rules and regulations, it is not necessary to include them as mitigation.

Construction of the project is expected to occur in one construction season and last approximately four months.

Due to the grading only activities associated with the project and lack of urban development, the Roadway Construction Emissions Model 7.1.4 was used to model project grading emissions within the timeframe mentioned above. There are four primary construction phases of interest in the model: clearing and grubbing, grading, utilities and paving. The proposed project does not include utilities or paving construction; therefore, those phases were excluded from the model. Also, project specific information provided by the applicant was used in the model. Some of the changes to the model defaults include: decreasing the number of water trucks to two and decreasing the daily miles traveled to 80, changing the number of workers to 10, changing the number and type of equipment,

and changing the average hours per day from eight to eleven. The results are shown in Table 5 below.

Table 5. Roadway Construction Model Results – Construction Phase NO_x

Construction Phase	Constituent in pounds per day		
	NOx	**PM_{10}**	**$PM_{2.5}$**
Clearing and Grubbing	62.7	200.7	43.6
Grading	198.5	206.6	49

As shown in the above table, the project would exceed the NO_x significance threshold in the grading phase of the project. For projects that exceed the threshold, SMAQMD recommends implementation of a standard construction mitigation measure that would reduce heavy-duty off-road diesel powered equipment emissions by 20% for NO_x and by 45% for particulates, as compared with the most recent CARB fleet average, and that also limits the opacity of visible exhaust emissions.

For projects with NO_x emissions that remain significant even after the 20% reduction afforded by the standard construction mitigation measure, SMAQMD recommends payment of an off-site air quality mitigation fee to further reduce NO_x emissions to a less than significant level. The mitigation fee is based on the amount of emissions that remain over the threshold after implementation of the standard construction mitigation measure, and the cost of reducing an equivalent amount of off-site emissions. SMAQMD uses the mitigation fees to help fund regional air quality programs, such as the replacement of older construction equipment with newer models, and the retrofitting of older equipment with pollution-reducing components. Since NO_x is a precursor to regional ozone formation, mitigation fees are used on projects anywhere within the ozone non-attainment area that meet the cost-effectiveness criteria used to determine the fee.

Access Roads. Air quality concerns would be temporarily increased on both access roads due to truck and equipment traffic and the off-haul of spoils dirt. Alternative A has two sensitive receptors along the route (McFarland Living History Ranch and two residences), while Alternative B has no sensitive receptors along the route. The sensitive receptors along Alternative A would be exposed to increased NOx and PM10 during the implementation and construction of the project. As there are no sensitive receptors along Alternative B, there would be no short-term direct impacts due to air quality on that proposed access road.

Mitigation

Emissions would result from the use of construction equipment, truck haul trips to and from the stockpiles, and worker vehicle trips to and from the construction on site. Prior to construction, the contractor would submit a construction equipment list to be used in the project for approval by the BLM, Duck's Unlimited, and SMAQMD. The contractor would be required to follow the requirements of SMAQMD's standard mitigation program. Any remaining emissions of the NOx threshold should be reduced via a mitigation fee payment. The mitigation fee is currently $17,460/ton, which is based on cost-effectiveness standards established by the California Air Resources Board for the Carl Moyer Incentive Program, a state funded program for reducing emissions from off-road equipment. The SMAQMD mitigation fee for a specific project is

calculated using the following formula: number of pounds per day of construction NO_x remaining over the 85 lbs/day significance threshold (after accounting for the 20% emission reduction due to standard construction mitigation), converted to tons, multiplied by the number of days of construction, multiplied by the standard fee of $17,460/ton $NO_{x,}$ plus a five percent administrative fee.

Based on the information known by the applicant at this time the fee is estimated as $43,051. Since the construction contractor would be determining the type and number of equipment used on the project site, the NOx emissions may be reduced if the equipment list is significantly different than modeled for this analysis. If this is the case, the fee may be less than estimated.

Please refer to Section 2.2 of this document for measures to reduce emissions from heavy-duty construction vehicles and to reduce air quality degradation by dust and other contaminants.

Climate and Climate Change

Proposed Action. CO_2 is produced by the burning of fossil fuels and would be the predominant GHG generated during this project. Because no major sources exist for the other GHGs during the construction of this project, they are not considered to be significant and no quantitative emission calculations were made for them. CO_2 emission estimations were based on exhaust emission and were generated using the Sacramento Metropolitan Air Quality Management District's Road Construction Emission Model (version 7.1.4). It should be noted that although CO_2 emissions are now calculated for climate change assessment, there remains no Federal standard, or State or local threshold to meet, which makes these emissions difficult to fully analyze. The EPA Reporting Rule is the only quantitative limit that currently exists, which requires facilities to report on any GHG emissions above 25,000 tons per year. The emissions generated by this project are significantly below the 25,000 tons per year threshold, so it is assumed that they are considered less than significant.

The emissions that would be generated by restoration of the Cougar Floodplain would be temporary in nature. There would be no permanent increase of long-term GHG emissions as a result of project construction.

Access Roads. The proposed access roads would not adversely affect climate and climate change.

Mitigation

Please refer to Section 2.2 of this document for measures to further reduce GHG emissions associated with the project. With the implementation of these mitigation measures, the CO_2 emissions would likely be reduced. Since effects from GHG emissions would be temporary and the CO_2 emission analysis suggests that emissions would be below the 25,000 ton reporting requirement, it is anticipated that the effects on climate change associated with this project would be less than significant.

Soils, and Prime and Unique Farmland

Proposed Action. Restoration activities would disturb soils at the restoration site. Construction of the proposed action would long-term effects to the local topography, as the levees

would be breached and the slough swales would be constructed; however, it would result in short-term soil disturbances throughout the project area. These disturbances would be associated with heavy equipment use and the removal of structure foundations.

There is no prime and unique farmland within the project area. There is approximately 86 acres of "Farmland of Statewide Importance"; however none of the 86 acres is within the project footprint. It is all located within the Silverado Unit to the east of the project footprint, and the restoration activities would have no effect.

Access Roads. The access road Alternative A would result in the temporary construction of approximately 1.5 mile of new road around and to the west of the McFarland Living History Ranch. The construction of the temporary road around the McFarland Ranch and on the Silverado Unit would involve using a standard road grader to strip and curl the vegetation and topsoil off to one side of an approximate 12-foot wide road, including turn-out areas to allow vehicles to pass each other. The implementation of appropriate BMPs for the proposed action would avoid significant effects to soil resources by minimizing the potential loss of soil. Once the proposed off-haul is completed, the temporary road would be disked to loosen any compaction that occurred during the off-haul and then the stripped vegetation and topsoil would be re-graded onto the surface. Early fall/winter rains would stimulate germination of the naturally occurring seed in the topsoil to re-vegetate the pastureland that was disturbed.

The access road Alternative B is currently graveled agricultural roads. The implementation of appropriate BMPs for the proposed action would avoid significant effects to soil resources by minimizing the potential loss of soil.

Mitigation

Soils. Please refer to Section 2.2 of this document for measures and BMPs that would minimize effects to this resource. Implementation of appropriate BMPs for the proposed action would avoid significant effects to soil resources by minimizing the potential loss of soil.

Prime and Unique Farmland. As there would be no effect on prime and unique farmland or farmland of statewide importance, no mitigation is necessary.

Water Quality

Proposed Action. During the construction of the proposed action, the vast majority of the work would be conducted on the dry side of the river's levee prior to breaching the levee. Once the levee is breached in the two proposed locations, the disturbance of soil during the proposed action could degrade local water quality due to increased surface runoff in areas adjacent to the Cosumnes River, impacting both the chemical and biological aspects of water quality. Additionally, 72,200 cubic yards of the construction soil spoils would be removed from the project footprint. The soil is likely to be laden with elemental mercury from historic gold mining in the upper Cosumnes River watershed, and the removal would result in the overall reducing the amount of mercury and potential methyl-mercury within the unit post-restoration.

Access Roads. The proposed access roads (Figures 2 and 3) would not adversely affect water quality.

Mitigation

The proposed project will result in the disturbance of more than one acre; therefore, the contactor would be required to prepare a SWPPP, which describes the best management practices (BMP) that would be implemented to control accelerated erosion, sedimentation, and other pollutants during and after project construction, reducing any affect to less than significant. Please refer to Section 2.2 of this document for measures. The specific BMPs that would be incorporated into the erosion and sediment control plan and SWPPP would be determined and prepared by the contractor in accordance with the Central Valley Regional Water Quality Control Board Field Manual, Section 404, and Section 401 of the CWA. The contractor would be responsible for implementing, maintaining, and monitoring BMPs during construction and restoration.

Hydrology

Proposed Action. To understand how the proposed alternative could potentially alter the hydraulics and sedimentation processes within the Cougar Wetland Unit, two models were developed:

(1) A Hydrologic Engineering Center River Analysis System (HEC-RAS) model was used to simulate the base and project conditions. The hydraulic model used was the HEC-RAS model of the North Delta prepared by MBK Engineers (MBK) for the North Delta Improvements Project. HEC-RAS is software developed by the U.S. Army Corps of Engineers designed to perform one–dimensional hydraulic calculations for a full network of open channels (MBK 2013). The study simulated the conditions during a 100-year interval flood event.

(2) A two-dimensional (2D) hydrodynamic model was developed and utilized to simulate the topographic existing conditions vs. the proposed alternative (CBEC 2013). The study simulated the conditions during a 2-year recurrence interval flood event.

HEC-RAS Model. The 100-year flood model computed the maximum water surface elevations at various locations (labeled "index points (IP), Figure 5) around the project site. Table 6 shows the calculated difference elevation, which was calculated by subtracting the defined base condition water surface elevation from the project condition water surface elevation and represents the impact of the project on the maximum water surface elevation for a 100-year flood event (MBK 2013).

The modeling showed that the proposed alternative does not change the hydraulics at the Cougar Unit during the 100-year flood even, as the existing levees are low in elevation and provide no flood protection for any flood greater than the 2-year flood event. The proposed action would lower elevation across the entire Unit by an average of half a foot. This lowering of elevations would not affect water surface elevations, as the Cougar Unit is location in the "Franklin Road Pond" (Figure 6), which would have sufficient volume during a 100-year flood to fill the entire site. Water surface elevations at the Cougar Unit are controlled by downstream levees and channel capacities. Based on the model simulations and review of the site conditions, the proposed alternative would not have an impact on the 100-year water surface elevation (MBK 2013).

Table 6. The maximum water surface elevation (feet NGVD-29) at the index points where the maximum water surface elevations were computed in the HEC-RAS model of the 100-year flood event (MBK 2013).

Location	Base Condition	Project Condition	Difference (feet)
Index Point (IP) 1	19.61	19.61	0.00
IP2 (Bensons Ferry)	19.3	19.3	0.00
IP3 (Twin Cities Rd)	21.3	21.3	0.00
IP4	20.17	20.17	0.00
Storage Area (SA) 43	19.71	19.71	0.00
SA 58	19.61	19.61	0.00
SA 59	19.63	19.63	0.00
SA 63	19.68	19.68	0.00

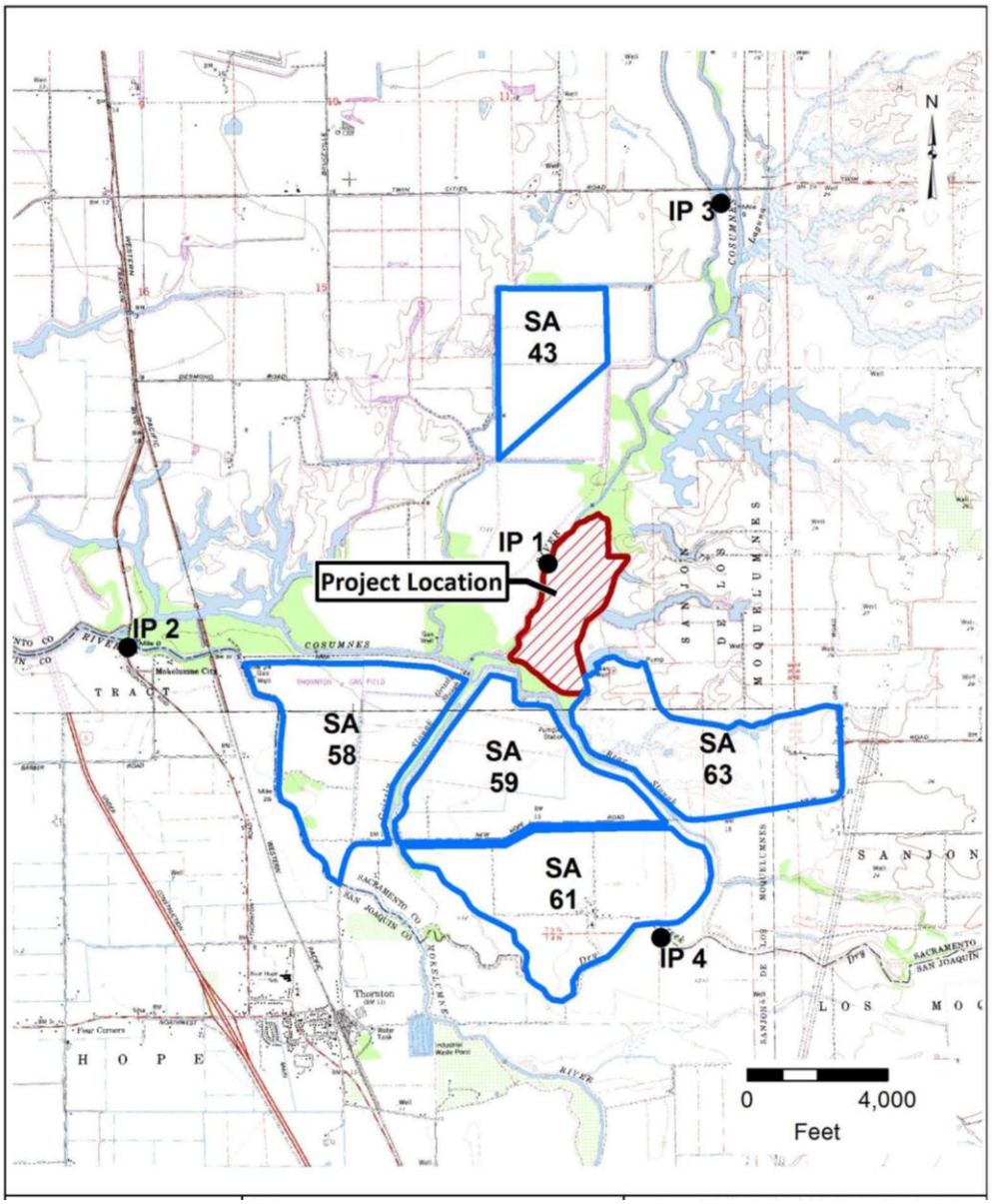

Figure 5. The location of the index points where the maximum water surface elevations were computed in the HEC-RAS model of the 100-year flood event (MBK 2013).

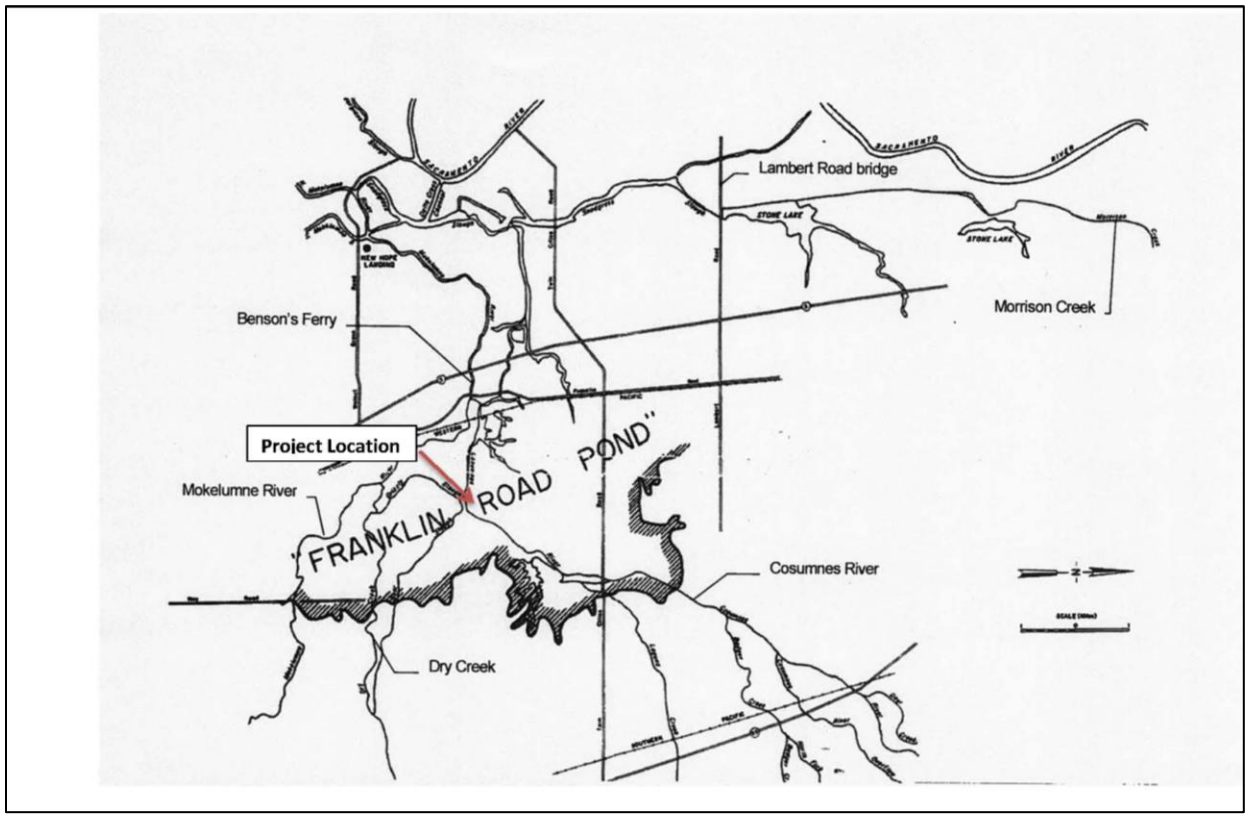

Figure 6. The "Franklin Road Pond" and Cougar Wetland within the Pond (MBK 2013).

2D Hydrodynamic Model. According to the *Two Dimensional Hydrodynamic Modeling of the Cougar Wetlands Floodplains* Report (CBEC 2013, the proposed action would not exacerbate flood depth, inundation extend or duration in the areas to the east of the Cougar Wetlands Unit. According to the modeling, which simulated a synthetic hydrograph, as opposed to an actual historical flood event, against the present and future conditions of the project area, at the flood peak the proposed alternative was shown to be 0.21 feet lower than the existing condition. Additionally, the extent of the flood inundation was found to be greater in the current existing condition than in the proposed alternative (Figure 7). The proposed alternative was shown to inundate eight acres *less* than the current existing conditions. The decreased inundation is due to the increased connectivity in the designed alternative. The breaches would allow water to flow through the Cougar Unit allowing them to drain more rapidly, rather than trapping the water on the Unit as currently occurs.

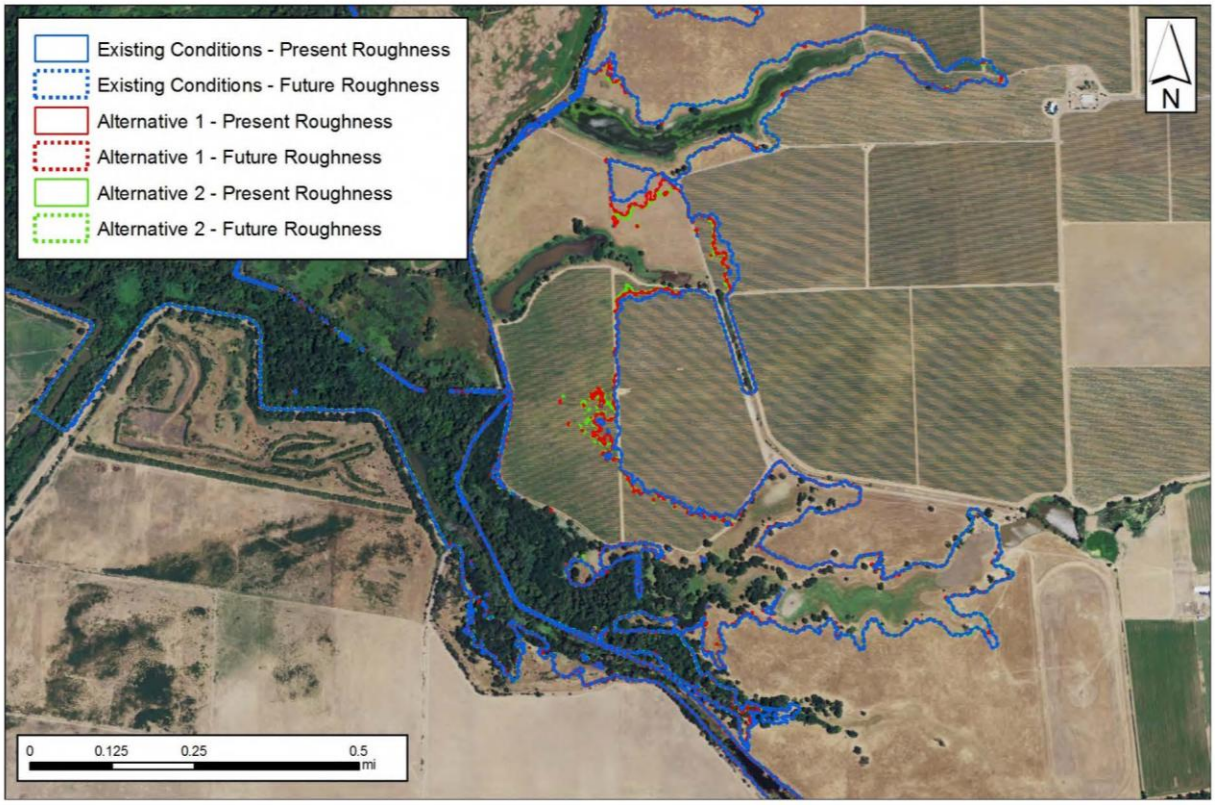

Figure 7. Inundation extents at flood peaks (CBEC 2013).

Another concern was the potential development of sand-splays forming at the levee breach location. Sand-splays have developed at several of the levee breaches on the western side of the Cosumnes River within the Preserve (Florsheim and Mount 2002). The potential for this type of sand-splay formation in the design breaches is a concern; the goal of the proposed alternative is to maintain tidal connectivity with the Cougar Unit. The modeling showed that the proposed breaches would function differently from those breaches that have previously occurred on the western side of the Cosumnes River within the Preserve. The modeled velocity and flows at the breaches of the proposed alternative were shown to be lower than that of the western breaches, and the peak flows occurred with flows exiting the proposed Cougar Wetland breaches, opposite of that shown in the western breaches (CBEC 2013). This combination would allow for less sediment movement into the breaches from the mainstem of the Cosumnes River, and would allow for a flushing of any potential deposition during the higher flows out of the breach points.

Access Roads. The proposed access roads (Figures 2 and 3) would not adversely affect hydrology.

Mitigation

There would be no changes that would exacerbate flood depth, inundation extent or duration as a result of the proposed alternative during the larger floods (greater than 2-year). Additionally, there would likely be a reduction in flood depth, inundation extent or duration, nor would the development of sand-splays occur at the 2-year flood. Therefore, no mitigation is necessary. Indeed, the implementation of the proposed alternative would likely provide a long-term benefit in

the reduction of flood impacts to those areas east of the Cougar Wetland Unit as a result of the common 2-year or less flood events.

Traffic

Proposed Action.

The project would temporarily affect local roads and county roads used as a haul route during construction. Haul trucks would cause and increase in traffic volume and reduce traffic speeds on local and county roads. Haul trucks would have a minor effect on the traffic volume (less than 1%) and traffic speeds on the busier streets.

During construction, the direction flow of the haul trucks is south to north. External haul routes would require the use of Orr Road, New Home Road, Thornton Road, Franklin Blvd. Twin Cities Road, and Christensen Road. Access points for off-hauling or importing material would be at Orr Road, Bean Ranch Road, and the corner of Desmond Road and Bruceville Roads. During the height of construction, it is estimated that trucks conducting approximately 30 haul trips would be accessing the site per day. The type and volume of construction traffic should not cause a substantial deterioration of the physical condition of the nearby roadways; however, pre-construction and post-construction conditions would be documented by the contractor. Any deteriorated roadways determined to be caused by the project would be repaired by the contractor.

Access Roads. The proposed access roads Alternative A and Alternative B both exit the project area on to Orr Road. The use of either access road would temporarily affect local roads and county roads used as a haul route during construction as trucks and equipment enter and exit the project site at Orr Road.

Mitigation

The contractor would be required to develop a Traffic Control Plan, which would be reviewed and approved by the County of Sacramento prior to construction. Please refer to Section 2.2 of this document for measures. The proposed mitigation measures would reduce the effects on traffic to less than significant.

Vegetation and Wildlife

Proposed Action.

Vegetation. The proposed action would result in a long-term loss of approximately 63 acres of seasonal wetland habitat due to the breaching of the levees and construction of the slough channels. The resulting 154 acres of Valley Oak riparian forest floodplain and vegetation, however, is a long-term gain and benefit. Approximately 31.5 acres of trees, shrubs, and understory would be removed within the proposed project footprint, including valley oak, cottonwood, and willow. Some of the removed tress, root wads and large woody debris would be placed within the newly created breach and slough channels to create increased microhabitat diversity and complexity within the channel for out-migrating salmonids and other species.

Wildlife. There would be short-term effects on wildlife, as the construction of the proposed action might disturb any wildlife within or near the project area. Though severe, these effects would be short-term, and post-restoration wildlife access should resume at pre-construction levels. Additionally, the proposed action would restore 1.4 miles of slough channel habitat, increasing availability of channel, streambank, and floodplain habitat to those species that utilize those ecological resources, such as juvenile salmon (*Oncorhynchus tshawytscha*), osprey (*Pandion haliaetus*), great-blue heron (*Ardea herodias*), river otter, and assorted passerine songbirds.

To minimize any potential adverse effects, construction of the proposed action would take place outside of nesting or breeding seasons, and construction activities would be limited to the smallest area possible.

Fisheries. The construction of the proposed action could cause short-term increases in turbidity and temporarily disturb aquatic fauna in the stream channel. Increases in turbidity (suspended sediments) could effect redds or fish that may be present during the breaching process, disrupt feeding activities of common fish species or result in temporary displacement from preferred habitats. Sediment shed into the river bed could also bury stream substrates that provide habitat for aquatic invertebrates, an important food source for fishes. Consequently, growth rates of fish could be reduced if turbidity levels or sediments substantially exceed ambient levels for prolonged periods. However, because of the limited amount of sediment erosion, as well as the movement and settling of the gravel and sediments, the elevated turbidity levels would be short term, localized, and less than significant. There would be no long-term adverse effects on fish. There would, however, be long-term beneficial effects, as the new slough channel and floodplain habitat becomes available to juvenile salmonids, and in the increased habitat diversity available to the benthic macroinvertebrate community within the Cosumnes River.

Access Roads. The access road Alternative A would result in the temporary construction of approximately 1.5 mile of new road around and to the west of the McFarland Living History Ranch. The top soil would be removed and set aside, as described in Section 2.1, for a temporary loss in 2.18 acres of grassland habitat. Once the proposed off-haul is completed, the temporary road would be disked to loosen any compaction that occurred during the off-haul and then the stripped vegetation and topsoil would be re-graded onto the surface. Early fall/winter rains would stimulate germination of the naturally occurring seed in the topsoil to re-vegetate the grassland habitat/pastureland that was disturbed.

The access road Alternative B is currently graveled agricultural roads that boarders a grape vineyard. The implementation of appropriate BMPs for the proposed action would avoid significant effects to soil resources by minimizing the impacts of dust to the grape vines.

Mitigation

Vegetation. Please refer to Section 2.2 of this document for measures. The proposed seedings and cuttings are an effort to help actively "jump start" the natural restoration process in the Cougar Unit. However, it is expected that most of the "real" restoration will be via natural flooding processes over time, as has been demonstrated at the Preserve's previous levee breach sites over the past 20 years.

Wildlife. Please refer to Section 2.2 of this document for measures. With implementation, the proposed action would have no significant effects on wildlife, migratory birds or potential migratory bird habitat and no mitigation would be required.

Fisheries. As there would be no significant long-term effects on the common fish of the Lower Cosumnes River, no mitigation would be required.

Special Status Species

Proposed Action. For all the taxa listed, please refer to the BA (BLM 2013) for the detailed direct and indirect effects.

Access Roads. The access road Alternative A would result in the temporary construction of approximately 1 mile of new road around and to the west of the McFarland Living History Ranch. The top soil would be removed and set aside, as described in Section 2.1, for a temporary loss in 1.45 acres of grassland habitat. Once the proposed off-haul is completed, the temporary road would be disked to loosen any compaction that occurred during the off-haul and then the stripped vegetation and topsoil would be re-graded onto the surface. Early fall/winter rains would stimulate germination of the naturally occurring seed in the topsoil to re-vegetate the grassland habitat/pastureland that was disturbed. The access road Alternative B is currently a graveled agricultural road that boarders a grape vineyard.

Western Pond Turtle

The western pond turtle is fairly common in the Lower Preserve and in the Preserve's Badger Creek Unit near Arno Road and Highway 99. The presence of suitable habitat and the proximity of the proposed action to these areas indicate that the western pond turtle could be present, disperse, forage, and breed at or near the proposed action area.

The proposed action and access roads would not adversely affect the western pond turtle. As described in the BA, the long-term beneficial effects of the Cougar floodplain restoration project, i.e. improved basking and nesting habitat, far outweigh any potential temporary adverse effects of harassment and the very little chance of actually harming a turtle during the project.

Swainson's Hawk

The Swainson's hawk is a known summer resident of the Preserve and the surrounding areas. The presence of suitable habitat and the proximity of the proposed action to these areas indicate that the hawk could be present, disperse, forage, and nest at or near the proposed action area. The short-term loss of 2.18 acres of grassland habitat (access road Alternative A) could have a temporary impact on the Swainson 's hawk foraging habitat. However, once the proposed off-haul is completed, the temporary road would be disked to loosen any compaction that occurred during the off-haul and then the stripped vegetation and topsoil would be re-graded onto the surface. Early fall/winter rains would stimulate germination of the naturally occurring seed in the topsoil to re-vegetate the grassland habitat/pastureland that was disturbed, resulting in minimal impact to Swainson's hawk foraging habitat. The long-term beneficial effects of the Cougar riparian restoration project (i.e. improved nesting habitat) far outweigh the potential temporary adverse effects that may occur to the species.

Tricolored Blackbird

Tricolor blackbirds historically occurred on the Preserve; a nesting colony existed until approximately 10 years ago, roughly 2 miles northwest of the proposed project area in the Preserve's "Barn Pond" wetland unit. And though the Preserve is currently managing nesting habitat for the tricolored blackbird roughly 3 miles northwest of the proposed project area in the Preserve's "Lost Slough" wetland unit, surveys conducted by Preserve biologists and Audubon-California biologists have not found any evidence of colonization by the birds to date.

The presence of suitable habitat and the proximity of the proposed action to these areas indicate that the tricolored could potentially be present, disperse, forage, and nest at or near the proposed action area. If tricolored blackbirds were to occur at or near the proposed action area, direct effects would include the potential for harm (in the form of injury or death) and harassment of all blackbirds present within the proposed action area during construction and restoration activities. If tricolored blackbirds were present, these effects would be minimal and temporary as the proposed activities are in short duration and last less than one season for the birds. However, as described in the BA, because the tricolored blackbird does not currently colonize on the Preserve, nor forage near the proposed action area, the proposed action and access roads would not adversely affect the bird.

Yellow-billed Cuckoo

The yellow-billed cuckoo has been recorded at the Preserve, but it is rarified, an extremely uncommon transitory bird. The Preserve does have essential habitat necessary for resident or nesting cuckoos, if they were to occur on the Preserve. The presence of suitable habitat and the proximity of the proposed action to these areas indicate that the yellow-billed cuckoo could potentially be present, disperse, forage, and nest at or near the proposed action area. The proposed action and access roads would not adversely affect the yellow-billed cuckoo. As described in the BA, The long-term beneficial effects (i.e. increasing the acreage of contiguous riparian habitat along the Cosumnes River, improved nesting and foraging habitat) of the Cougar riparian restoration project far outweigh the potential temporary adverse effects that may occur to the species.

Greater Sandhill Crane

The greater sandhill crane is a winter resident of the Preserve, and has been known to utilize Cougar wetland as a roost location early in the season until the area becomes too deep with annual high water. Up to 100 to 150 cranes (mixed lesser and greater) have been observed using the roost site while the site is viable during the winter season.

Since the greater sandhill crane is exclusively a winter/wet season migratory resident of the Preserve (including the proposed action area) and the proposed action would occur during the summer/dry season, the proposed action would not directly affect this species.

Potential indirect impacts include loss of roost and foraging habitat. Greater sandhill cranes exhibit a high degree of philopatry to their roost and foraging areas, and any disturbance, including habitat changes would result in the cranes being uprooted. However, the Preserve provides almost 2,000 acres of high quality essential wetland habitat in the Lower Preserve, and an additional 9,000 acres of habitat on Staten Island. The loss of the small portion of the Cougar Wetland Unit that is

available for the cranes to use only very early in the winter season would be negligible over all to the habitat availability on the Preserve.

The proposed access roads would not adversely affect the greater sandhill crane.

Sacramento Splittail

Sacramento splittail are known to occur in the Cosumnes River and inhabit the river during spawning and juvenile life stages. The long term benefits of the proposed actions would be ultimately beneficial to the Sacramento splittail populations as the resulting floodplain habitat and side-channel access routes used by breeding adults for spawning would be improved and the potential for fish stranding would be decreased.

The long-term beneficial effects of the Cougar floodplain restoration project, i.e. improved spawning habitat and positive drainage to significantly reduce or eliminate potential for fish stranding, far outweigh any potential temporary adverse effects of the potential harassment and the very little chance of actually harming a fish during the project.

The proposed access roads would not adversely affect the Sacramento splittail.

Giant Garter Snake

In the 25-year history of the Preserve, there have been no documented sightings of giant garter snakes within the action area. However, the presence of suitable habitat and the proximity of the proposed action area to sightings indicate that giant garter snakes could disperse, forage, and breed at or near the proposed action area. Due to the avoidance measures described in the BA, the proposed action is not likely to affect the giant garter snake. Additionally, the proposed access roads would not adversely affect the Sacramento splittail.

Delta Smelt

Delta smelt are not known to occur in the Cosumnes River since it is primarily a freshwater system (Merz, et al. 2011; Jeffres, pers. com. 2012). However, smelt use the open surface waters of the San Joaquin Delta system and Delta channels and sloughs several miles downstream of the proposed action area, up to the confluence of the Mokelumne and Cosumnes rivers. Critical habitat was previously designated on the floodplain across the river from the project site. However, many people question its validity based on the scientific data that is now available today on delta smelt.

There are no direct effects to delta smelt since, according to modern scientific studies and observations, they do not occur within the Cosumnes River (Merz, et al. 2011; Jeffres, pers. com. 2012). While critical habitat has been designated for the smelt near the project site, the project area lies outside of the designated critical habitat boundaries, so no destruction or adverse modification would occur to designated critical habitat for this species.

There are no significant, long-term adverse effects to the delta smelt expected as a result of this project either by the proposed action or the proposed access roads. Rather, the project is expected to yield long-term, positive, beneficial effects for this species by creating additional spawning habitat capable of supporting spawning adults if they were to ever occur within the

proposed action area (e.g., sea level rise creates proper salinity conditions that support the species existence that far up into the Cosumnes River).

Fall-run Chinook Salmon

Fall-run Chinook salmon are known to occur in the Cosumnes River and inhabit the river during spawning and juvenile life stages. In fact, this project has been designed specially to benefit out-migrating salmonids by allow them access to their historic floodplain habitat so they can put on size and mass before heading out to sea. The long term benefits of the proposed actions would be ultimately beneficial to the fall-run Chinook salmon populations as the resulting floodplain habitat and side-channel access routes used by juvenile salomonids would be improved and the potential for fish stranding would be decreased. The proposed access roads would not adversely affect the fall-run Chinook salmon

The long-term beneficial effects of the Cougar floodplain restoration project, i.e. improved juvenile rearing habitat and positive drainage to significantly reduce or eliminate potential for fish stranding, far outweigh the temporary adverse effects of the potential harassment and the very little chance of actually harming a fish during the project.

Central Valley Steelhead

Central Valley steelhead are known to occur in the Cosumnes River floodplain habitats during the juvenile rearing stage of the lifecycle. However, due to avoidance and minimization measures described in the BA, the proposed action is not likely to have any adverse effect on steelhead. Additionally, the long-term beneficial effects of the Cougar floodplain restoration project, i.e. improved juvenile rearing habitat and positive drainage to significantly reduce or eliminate potential for fish stranding, would far outweigh the temporary adverse effects of the potential harm or harassment on steelhead. The proposed access roads would not adversely affect the Central Valley steelhead.

Central Valley steelhead are not known to spawn in the Cosumnes River due to the relatively high water temperatures and hydrologic disconnection of the river during the summer months. Therefore, no direct effects to adult Central Valley steelhead are expected.

The Cosumnes River is designated as "occupied but excluded" from critical habitat designation within the North Valley Floor Hydrologic Unit critical habitat for Central Valley steelhead due to the "balancing process for economic impacts" associated with the critical habitat designation process (70 FR 52531). Therefore, no adverse modifications to critical steelhead habitat would occur. In addition, when completed, the project area would increase the amount of EFH for juvenile rearing.

Mitigation

A letter from the BLM, dated April 22, 2013 was written to USFWS requesting concurrence with our determination that the proposed activity may affect, but is not likely to adversely affect valley elderberry longhorn beetle, giant garter snake or the delta smelt, or their habitat with the implementation of appropriate protection and minimization measures.

A second letter from the BLM, also dated April 22, 2013, was written to NOAA Fisheries

requesting concurrence with our determination that the proposed activity may affect, but is not likely to adversely affect the steelhead, fall- run Chinook, or EFH for Pacific salmon,

The response letters from the USFWS and NOAA Fisheries are included in Appendix C. Please refer to Section 2.2 of this document and the two response letters for a complete listing of the avoidance and minimization measures to be taken. With the implementation of these avoidance and minimization measures, any potential impacts would be reduced to less-than-significant and the proposed project would not likely to affect these taxa.

Recreation

Proposed Action. With the proposed action, it is anticipated that there would be no change to the continuation of the Preserve's Waterfowl Hunting Program. The BLM would continue to annually issue a Special Recreation Permit to a hunting organization to administer the program. However, the proposed action would result in the improvement of the roads, paths, and hunting blinds, ensuring that they are ADA compliant. Additionally, the change in the available hunting habitat from seasonal marsh to valley oak riparian forest floodplain and slough channels could change the hunt from a more open habitat to a wooded habitat. This change is not anticipated to change the quality of the hunt, but could possibly change the available waterfowl species to that more suited to wooded habitats, such as wood ducks and mallards.

Access Roads. As the construction period of the project is outside of the hunting seasons as defined by CDFW, the proposed access roads (Figures 2 and 3) would not adversely affect recreation.

Mitigation

As there would be no changes to the occurrence, timing, or quality of the Preserve's Waterfowl Hunting Program, and the end result of the proposed action would be improved ADA compliant access and hunting blinds, no mitigation is needed.

Visual Resources

Proposed Action. BLM manages the area in accordance with VRM class II standards, which is to retain the existing character of the landscape.While there would be a temporary effect on the viewshed due to the restoration of the slough channels and the levee breaching, and removal of the seasonal wetlands that currently characterize the unit, these effects would be temporary in nature. The unit would be replanted and landscaped following construction and it is expected that it would return to a pre-agricultural visual condition of riparian floodplain forest.

Access Roads. The access road Alternative A would result in the temporary construction of approximately 1.5 mile of new road around and to the west of the McFarland Living History Ranch, resulting in the short-term disturbance of approximately 2.18 acres of grassland/pastureland and to the visual resources along the route. The construction of the temporary road around the McFarland Ranch and on the Silverado Unit would remove the vegetation and topsoil on a 12-foot wide, 1.5 mile long temporary road. Once the proposed off-haul is completed, the temporary road would be disked to loosen any compaction that occurred during the off-haul and then the stripped vegetation and topsoil would be re-graded onto the surface. Early fall/winter rains would stimulate germination

of the naturally occurring seed in the topsoil to re-vegetate the pastureland that was disturbed, returning the temporary road area to pre-construction conditions.

The access road Alternative B is currently graveled agricultural roads. There would be no impact to visual resources from Alternative B.

Mitigation

As all visual effects to the project area would be temporary, there would be no environmental effects to aesthetics and visual resources from project construction. Effects on visual resources would be less than significant; post-construction revegetation and landscaping at the demolition sites would be sufficient mitigation.

Cultural Resources

Proposed Action. The proposed action's area of potential effects (APE) includes Cougar and Silverado units, as well as the two alternative haul routes and five areas where dirt would be placed. The APE was intensively studied for significant cultural resources (historic properties) in 2012 and 2013. The study included intensive field inventories, cultural resources record searches, and historical research. There are two reports documenting the cultural resources study: one focused on Cougar and Silverado units (Barnes 2013c), the other focused on the potential haul routes and areas where dirt would be placed (Barnes 2013b). Since the restoration would involve subsurface excavations to 9 ft within Cougar wetland, the study also included geoarchaeological investigations of this area in 2012 by a consultant Pacific Legacy, Inc. (Dalldorf 2012).

Additionally, the BLM consulted with tribes who might attach religious and cultural significance to cultural resources within the APE. We initiated tribal consultation in September 2012. Seven tribes were contacted. Five were reached, and we ultimately had face-to-face meetings with three including Wilton Rancheria, United Auburn Indian Community (UAIC), and Buena Vista Rancheria. We toured the project area with UAIC in April 2013. To date, no tribal issues have been identified other than Wilton Rancheria has requested that we have a Native American monitor present during project implementation.

The BLM held two meetings at the Preserve visitor center in September 2012, not far from the APE, to discuss the restoration project with interested members of the public.

As a result of the cultural resources study, tribal consultation, and public meetings, six cultural resources were identified within the APE. These resources include:

CA-018-SV-01: a prehistoric lithic scatter site
CA-018-SV-03: a historic-era water-control structure and associated levees
CA-018-SV-04: a historic-era silage area
CWR 01: a historic-era concrete and brick foundation and road segment (300 ft)
CWR 02: a historic-era road (1.2 miles)
CWR 03: a historic-era road segment (1 mile)

CA-018-SV-03 (water-control structure) may be removed, damaged, or negatively affected in some way during the restoration project. It is recommended that this resource is not eligible for

inclusion on the National Register of Historic Places (NRHP) (Barnes 2013c). The structure has poor integrity. It does not have significant engineering or architectural attributes nor is it associated with people important in history. The water-control structure is related to the important historic theme of land reclamation in the Delta since the Gold Rush but it does not significantly contribute to this theme. It is also recommended that isolates and earthen levees found within the APE are not historically significant (Barnes 2013c).

The other five cultural resources identified within the APE would be assumed to be significant or NRHP eligible; these resources would either not be affected (through planned avoidance) or would not be negatively affected. The boundaries of CA-018-SV-01 (lithic scatter) and the foundation at CWR 01 would be flagged for avoidance in advance of project implementation. CA-018-SV-04 (silage area), CWR 01 (road segment), CWR 02 (road), and CWR 03 (road segment) would not be negatively affected by the project.

On this basis, the BLM had found that the proposed action and access roads would not cause adverse effects to significant cultural resources (historic properties) (Barnes 2013a).

Please refer to Section 2.2 of this document a complete listing of the project design features to be taken. With the implementation of these project design features, any potential impacts would be reduced to less-than-significant and the proposed project would have no adverse effects to cultural resources.

4.2 Impacts of the No Action Alternative

Areas of Critical Environmental Concern

The No Action alternative would have no effects on the ACEC. Current resources and attributes would remain the same and be managed under the same guidelines as defined in the BLM's February 2008 Sierra Resource Management Plan and Record of Decision.

Noise

The No Action alternative would have no effects on existing noise in the project area. Current noise sources and levels would be expected to remain the same under the existing land management and habitat types.

Air Quality

This alternative would have no effect on existing air quality in the project area. Air quality would continue to be influenced by climatic conditions, wild fires, and local and regional emission from vehicles and agriculture.

Climate and Climate Change

Under the No Action alternative, the restoration of the Cougar floodplain would not take place. As a result, there would be no additional generation of GHGs associated with construction vehicles and activities. The global climate would continue to change similar to current patterns. In the event of a levee failure or overtopping during a large (e.g. 100-year) flood event, there would be

a possibility of large amounts of GHG emissions generated throughout the flood fighting and clean-up efforts.

Soils, and Prime and Unique Farmland

This alternative would not affect the current land use, soils, or Prime and Unique Farmland in the project area. The land use, soils, or agricultural lands would remain the same. The Unit would be maintained as a managed seasonal wetland with the current flood regime and sediment deposition.

Water Quality

Under this alternative there would be no construction activity to affect water resources or quality in the project area. The surface and groundwater conditions would continue to be affected by agricultural contaminants through runoff and extreme flooding events could wash siltation and contaminants into the water system.

Hydrology

With the No Action alternative, the current hydrology would remain unchanged. The levee would remain intact, reducing the connectivity between Cougar Wetlands and the Cosumnes River, and the area would continue in the current seasonal flood regime as described in the *Two Dimensional Hydrodynamic Modeling of the Cougar Wetlands Floodplains* Report (CBEC 2013).

Traffic

The No Action alternative would have no effects on existing traffic in or near the project area. The types and numbers of traffic would remain the same in the vicinity of the unit.

Vegetation and Wildlife

The No Action alternative would have no effects on existing vegetation, wetlands, wildlife and wildlife habitat or fisheries, as the plant types and wildlife habitat would be expected to remain the same. Noxious weeds and other invasive vegetation that can impact soil function and reduce soil biodiversity would continue to spread and displace native plant and animal species, and the BLM and Preserve Partners would continue the expensive and labor intensive management regime that is currently in pace. Although efforts to provide habitat for wildlife would continue under the no action alternative, efforts to provide contiguous high quality native habitats are likely to be less effective because of the ecologically unsuitable habitat management regime currently in place.

Special Status Species

Under the No Action alternative, the proposed double breach and slough channels would not be constructed. As a result, there would be no construction-related effects to existing special-status species, their critical habitat, or EFH. The types of special-status species and habitat in the project area would be expected to remain the same. The Preserve's goal to restore and maintain a population of fall-run Chinook salmon in the Cosumnes River, with an average annual spawning run of 2,000 adults (10-year average, range of 1,000 – 5,000 adults (Kleinschmidt 2008) would likely

not be attained, thereby adding to the risk that the fall-run chinook would be listed under the Endangered Species Act.

Recreation

Under the No Action alternative, the recreational opportunities at the Cougar Unit would remain the same. The BLM would continue to annually issue a Special Recreation Permit to a hunting organization to administer the Preserve's Waterfowl Hunting Program.

Visual Resources

This alternative would not affect the current visual resources in the project area. The natural landscape and views along the roadways would remain the same.

Cultural Resources

Under the no action alternative, cultural resources would not be affected.

4.3 Cumulative Impacts

NEPA regulations requires that an EA discuss project impacts that, when combined with the impacts from other actions, could result in cumulative effects (40 CFR 1508.25). Cumulative impacts may result from individually minor, but collectively significant, effects of several projects over a period of time.

There are no long-term site-specific adverse impacts expected from the proposed action for ACEC, prime/unique farmlands, floodplains, invasive and nonnative weeds, cultural resources and Native American concerns, threatened or endangered species, water quality, and wetlands and riparian zones so no adverse cumulative impacts are expected at a larger scale. There would be short term cumulative effects on traffic and air quality. The amounts of traffic and emissions would increase due to the operations of construction and mitigation measures would be implemented to reduce the effects.

The implementation of the Cougar Floodplain Restoration Project is expected to provide positive, beneficial effects for floodplains, valley oak riparian and floodplain zones, and threatened and endangered species because long term site specific restoration efforts increase habitat connectivity, decrease habitat fragmentation, and increase the amount of natural habitat in the Central Valley. Cumulatively, other ongoing and future habitat restoration projects would have beneficial effects by increasing the acreage of available valley oak riparian forest, floodplain connectivity, and increased juvenile Chinook salmon and steelhead rearing habitat in the region. These current and future projects, combined with recent past projects along the lower Cosumnes River contribute significantly to the benefit of sensitive and rare habitats and species. \

5.0 Agencies and Persons Consulted

Public meetings discussing the Cougar Floodplain Restoration Project were held on September 20, 2012, and September 26, 2013. Additional meetings were held with adjacent landowners on May 6, 2013, May 22, 2013, June 20, 2013, and December 5, 2013. This draft EA will be posted online at http://www.blm.gov/ca/forms/nepa/search.php?fo=Mother+Lode and available for public comment for 30 days. An "All Interested Parties" letter will be sent out to those agencies and individuals listed in Appendix D, and will also include a notification of the availability of the EA.

Additional agencies and persons consulted are listed in Appendix D.

5.1 BLM Interdisciplinary Team

Reviewers:

/s/ James Barnes *1-23-14*

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NEPA Coordinator

/s/ Amber Veselka *1-23-14*

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Outdoor Recreation Planner/VRM Specialist

/s/ Patrick Reilly *1-23-14*

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Botanist

/s/ James Barnes *1-23-14*

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Cultural Resources Specialist

/s/ Mark Ackerman *1-23-14*

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Wildlife Biologist

/s/ H. McQuillen *1-23-14*

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Air, Water, and Soil

5.2 Availability of Document and Comment Procedures

This EA, posted on Mother Lode Field Office's website (www.blm.gov/ca/motherlode) under Information, NEPA (or available upon request), will be available for a 30-day public review period. Comments should be sent to the Mother Lode Field Office, 5152 Hillsdale Circle, El Dorado Hills, CA 95762 or emailed to us at jjbarnes@blm.gov or mmbrumbaugh@blm.gov.

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